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THE VETERINARIAN,

A MONTHLY JOURNAL OF VETERINARY SCIENCE.

NOVEMBER, 1894.

CONDUCTED BY

J. MACQUEEN, F.R.C.V.S.,

ROYAL VETERINARY COLLEGE.

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SESSION 1894–5.

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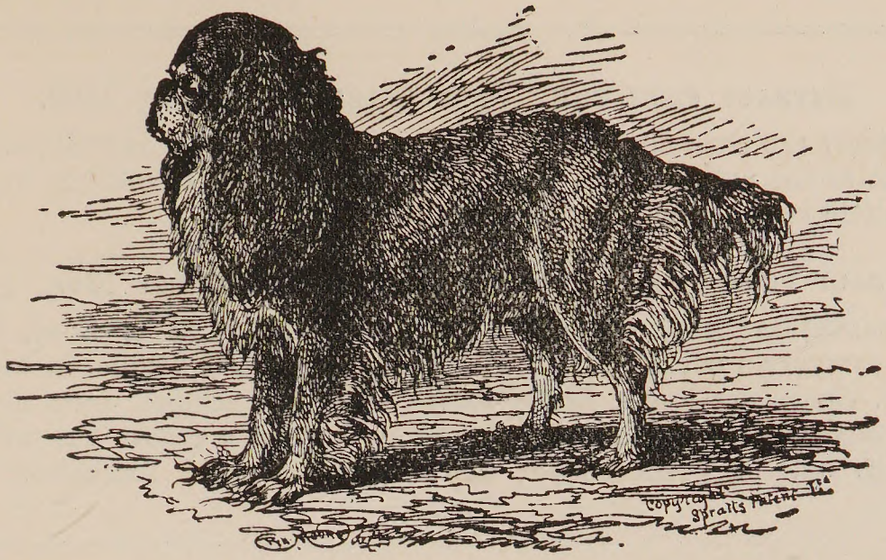

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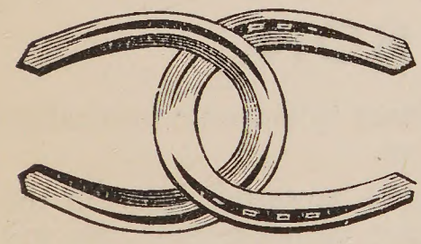

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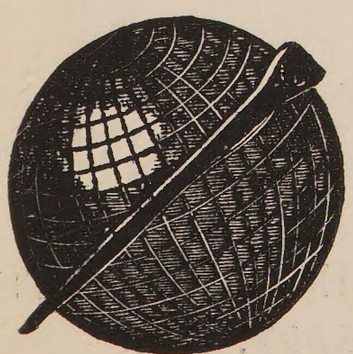

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Autobiography.

JAMES BEART SIMONDS, LATE PRINCIPAL OF THE ROYAL VETERINARY COLLEGE, PROFESSOR OF CATTLE PATHOLOGY, &c.

(*Continued from page* 749.)

Spread of the Plague to Sheep and Goats.—The first case which tended to arouse suspicion of the possible extension of the disease to other animals besides Cattle, occurred in August, 1865. A report given by a person, who had the care of a goat, was to the effect that the animal was ill and seemed to have "all the appearances of a little cow affected with cattle plague."

The goat was seen and at once removed to the College, where it died a few days after admission. The symptoms were allied to those existing in cattle, as were also the morbid changes revealed on making a *post-mortem* examination. No *positive* conclusion, however, could safely be at once come to.

In September following some sheep belonging to Mr. Temple, Blakeney, Norfolk, were reported as being affected with the plague, and that the disease had spread from them to the cattle on the farm. It was also added that many sheep were said to be affected at Crown Point, near Norwich. Instructions were therefore given me to at once institute an investigation into all the circumstances of the case.

It appeared that a cattle dealer had bought for Mr.

Temple 120 lambs at Thetford Fair, some of which on arrival at Blakeney were noticed to be unwell. The nature of the disease was not, however, suspected, but the shepherd remarked to his master that "they did not seem to be 'a very healthy lot,' and he thought they should be returned to the dealer."

Having satisfied myself that the Lambs were the subjects of the plague, and that the disease had extended from them to the cows, producing thereby a loss by death of six cows, a heifer, and a calf, I proceeded to Norwich for the purpose of inquiring into the alleged existence of the disease at Crown Point. Here I found a flock of upwards of 2000 Lambs, among which the Plague was extending, and had already caused very serious losses by death.

The plague, I also ascertained, had previously existed on this estate, with the result that 153 grazing animals —Cattle—had either died or been killed. Lambs were then bought to supply their place, some of which were brought in contact with the diseased cattle, and thus contracted the Plague.

My opinion, however, was stoutly resisted, it being contended that the Lambs were merely suffering from the quality of the herbage and mismanagement on the part of the shepherd. Subsequent visits were necessarily made, and on one of these Dr. William Budd and my colleague, Professor Varnell, kindly accompanied me and fully agreed with the opinion which had been given.

Opposing views, however, necessitated further investigations, and experiments were instituted at the College which distinctly proved that both by exposure and inoculation the plague was intercommunicable between cattle and sheep, as well as between sheep and sheep, and also between sheep and cattle.

The Medical Committee of the Norfolk Cattle Plague Association also conducted a similar set of experiments, which fully agreed in their results with those carried out at the College.

Many other outbreaks among sheep occurred in different parts of the country, and some in Scotland, so that the total number of diseased sheep officially reported amounted in England to 7754, and in Scotland to 759. In England 6343 were returned as having died, 1181 as being killed, and 1162 as having by isolation and other means escaped, leaving 68 not accounted for.

In September, 1867, a Veterinary Congress, consisting of 170 Deputies from their respective Governments met at

Zurich, mainly to discuss the means to be adopted for preventing the introduction of the Cattle Plague into the European States bordering on Russia. On this occasion, as a deputation from England, Mr. Ernes and I were present; Mr. Wm. Field, jun., M.R.C.V.S., also attended as an independant member. The debate extended over three days, each of us taking part in it. Among the chief conclusions unanimously arrived at were the following:

1. That the Cattle Plague exists continuously in the vast Steppes of Russia, and is not indigenous in European Countries adjoining its Frontier.

2. That the capability of the *Contagium* being conveyed to all other ruminating animals has been fully confirmed by the experience of the last three years.

3. That a Ten-day quarantine be established on all Ruminating animals crossing the Russian frontier, and that the stamping-out measures for exterminating the Plague among Cattle be applied to Sheep, Goats, and other ruminating animals.

Several other practical conclusions were also arrived at, but these do not here demand any special mention.

Outbreak in Ireland.—As early as August 9th, 1865, Professor Ferguson was commissioned to visit the Metropolis and report to the Irish Executive on the existence of the Plague in England.

Every facility was afforded him for investigating the disease in its different stages in living animals, and also of attending *post-mortem* examinations. In his report he recommended "the total prohibition of the importation of cattle into Ireland as long as there was the slightest trace of the disease in England or countries from which England received imports."

In addition to this inquiry, His Excellency the Lord Lieutenant sent in January, 1866, a second Commission, composed of Physicians, Surgeons, two Veterinary Surgeons, a Magistrate, and the Superintendent of the Agricultural Department of National Education. This Commission was also accompanied by another Veterinary Surgeon sent by the Carlow Agricultural Society. Their Reports were published conjointly with that of a Committee appointed to consider the measures to be adopted in the event of the Plague reaching Ireland.

These recommendations being forthwith strictly enforced, protected the Country down to April, 1866, when an out-

break of the Plague appeared suddenly at Drennan, county Down, which was supposed to depend on Cattle drovers.

On the information reaching the Cattle Plague Department, PROFESSOR BROWN was at once instructed by Colonel Harness to visit and report as to the means adopted to prevent an extension of the malady.

These he found to be most effectual. "Cordons had been drawn round infected places and strictly kept by the Constabulary. All diseased animals were killed and buried, and also all others that had been in contact with them. All persons who had gone into or near to the infected places were disinfected by the Constabulary, and no horses nor vehicles were allowed to be taken beyond prescribed boundaries."

"The entire number of animals exposed to the Infection was fifty, of which twenty-nine were attacked and either died or were killed; and twenty-one were slaughtered healthy. Ireland was thus quickly and effectually cleared of the Cattle Plague."

ALLEGED OUTBREAK IN THE ISLE OF MAN.—In the last week in MAY, 1866, it was feared that the Plague had extended to the ISLE OF MAN, in consequence of the existence of a fatal disease among the cattle. HIS EXCELLENCY THE LIEUTENANT-GOVERNOR at once communicated with the Privy Council, and requested that an investigation might be made. For this purpose Professor Brown received instructions to proceed forthwith to the Island.

After a searching investigation into the pathology of the existing disease, he was enabled to report on June 7th to HIS EXCELLENCY,—"in order to forthwith relieve the anxiety which prevailed among the owners of stock,"—"that although the disease had produced several deaths among the animals attacked, it was not contagious, and did not possess any of the characteristics of Cattle Plague."

Following the visit of the Irish Commission, a Second in point of date arrived, representing the North German Lloyd at Nordenhamm. It consisted of two Veterinary Surgeons, G. T. Rippen and H. Fasting. In their report they stated that "the disease was of a typhoid character, having great resemblance to the Rinderpest of Russia;" adding that "although they did not venture to express a decided opinion of its origin, they did state frankly and confidently that the disease could not have been introduced from Germany, nor from Oldenburg or Bremen."

The Third Commission came from France. It consisted of Professor Bouley, Alfort Veterinary School, and Professor Chauveau, Lyons. In their report they commented on the opposition which was originally made to the communication to the Home Government of the existence of the plague, adding that "it is absolutely certain that the malady is nothing else than the Contagious Typhus of horned cattle, the Rinderpest of the Germans." The result of their investigation was that an Imperial order was forthwith issued, closing all the ports of France from Dunkirk to Nantes.* A Fourth Commission came from Prussia, represented by Dr. Furstenburg, Professor in the Royal Academy of Eldena. In a letter which the Professor sent to the *Times* he stated that "the disease is Russian, only Russian, and it is an absolute impossibility that it should develop spontaneously among the herds of Western and Central Europe."

Besides these Commissions, Professor Jessen, of Dorpat, and Professor Ivanhoff, of St. Petersburg, arrived as a Commission from Russia. They were chiefly interested in the disease as existing in sheep, and as such Professor Brown received instructions to accompany them to the several farms where diseased sheep were to be seen.

Denmark also sent a Commission (Professor Sjostedt, of Copenhagen) to inquire into the means best to be adopted in the event of the disease reaching Denmark from English ports. On his return importations of both cattle and sheep from England were strictly prevented.

Holland.—It has to be here added that from our Metropolitan Market the plague was transmitted to Holland. About June 19th twenty-three oxen which had been sent by Mr. Defries, Schiedam, to his son were offered for sale in the market, and, not being sold by the 29th, they were returned to Holland. During the interval the animals had occupied Mrs. Nicholl's lairs. On being landed, within a few days twenty-one out of the twenty-three had died of the plague.

In the Marsh into which they were turned other cattle were grazing, which also contracted the disease. Upwards of six weeks, however, elapsed before information of the existence of the plague reached the Government, the attacks rising until they amounted to nearly 4,000. Attempts to stamp out the plague were strongly resisted, and consequently the

* In 1866 an official communication reached me to the effect that I had been elected Foreign Associate of the Imperial and Central Society of Veterinary Medicine in France, adding that this was the highest dignity which the Society can bestow on Foreign Members of the Profession.

attacks still rose until, according to the official returns, they reached 156,600, of which 78,114 died, and 36,485 were killed. The remainder being reported as having recovered.

Belgium.—From Holland the disease extended into Belgium, and not until the stamping-out system was enforced by the Government did the attacks diminish. The total loss was serious, amounting to 2357 animals. From Belgium it crossed the frontier in the Department of the Nord and Pas de Calais into France. The Government, however, immediately sent M. Lecoq, Inspector-General of the Veterinary Schools, "armed with power to kill both the diseased and suspected animals, and to compensate the owners for their loss." This judicious measure sufficed to free France with a loss of only *forty-three* animals.

Other importations of Cattle Plague into England subsequently occurred, before describing which however it is necessary to allude to my retirement from the Veterinary Department of the Privy Council, consequent on the death of Professor Spooner, previously mentioned as occurring in November 1871. On this occasion the Governors of the College informed the Clerk of the Privy Council that my entire services would now be required at the College. Thus, necessarily, arrangements had to be made for filling the vacancy in the Veterinary Department.

Prior to an appointment being made, Mr. Helps requested me to give my opinion on the subject. Unhesitatingly I replied, "Professor Brown," adding that such an appointment would, I believed, give satisfaction to the Royal Agricultural Society and also to agriculturists in general.

Re-introduction of Cattle Plague.—In July, 1872, a re-introduction of the disease took place, at which juncture the Governors of the College readily assented to my assistance being given to the Privy Council.

The first ascertained instance of its importation occurred by the landing of twenty-five animals on July 17th at Deptford Foreign Cattle Market, shipped at Cronstadt.

On being landed no special indications of the plague were detected. Some of the animals, however, seemed to have suffered more than ordinary fatigue from the voyage, and one of them having died during the night, created a suspicion of their being plague-stricken, which was confirmed on a *post-mortem* examination. All were forthwith killed, and their carcases placed in an Iron Cylinder heated with steam which had been specially erected for the purpose of the destruction of the bodies of diseased animals. Their

skins were also disinfected, as well as the slaughter-house and places which they had occupied. An Order of Council was likewise issued prohibiting the importation of cattle from Russia, and the slaughtering within the defined parts of Ports of all sheep and goats coming therefrom.

A second importation, however, took place at Hartlepool, July 21st. A mixed cargo shipped at Hamburg, consisting of German Cattle and Sheep,—among which Foot-and-Mouth Disease existed—also of fifteen Russian Cattle, one of which gave indications of the Plague. All were slaughtered within the Port.

A third at Leith, July 22nd. Cattle shipped also at Cronstadt. In this case the cargo consisted of fifty cattle, twelve of which were killed diseased, one died, and thirty-seven were slaughtered healthy. All were disposed of by being taken out to sea and thrown overboard.

A fourth cargo also from Hamburg to Newcastle arrived July 22nd. It consisted of seventy-eight animals; seven of which were German and eight Russian Cattle, two of which were diseased, and one other it was ascertained had died on the passage. They were all slaughtered as quickly as possible and their skins disinfected, and the bodies of the diseased removed to a Manure manufactory close at hand, and at once destroyed by chemical agents.

A fifth consisted of fifty-six Russian Cattle likewise shipped at Cronstadt for Hull; arrived July 25th. The Inspector went on board directly on the vessel coming into port, and found one diseased, and learned that two others had died at sea. They were not allowed to land, and all were slaughtered on board the ship, and their carcases put on board Lighters and towed out to sea for the purpose of being sunk. Both Professor Brown and I had much difficulty in this case with the Local Authority and also with some Merchants, as we resisted all attempts to bring the *Cargo* on shore without being first disinfected, it being a mixed one composed of Flax and other materials most probably largely charged with infecting matter. We also insisted on the decks of the vessel being cleansed and disinfected, as well as the men employed in slaughtering the animals. It was subsequently ascertained that the Lighters were not sunk according to arrangement, but that the dead animals were thrown overboard; also that some of the carcases were afterwards washed ashore. No ill effects, however, are known to have arisen out of this injudicious proceeding.

The sixth was *a second* importation from Hamburg into Hartlepool. Twenty-six German cattle were brought into dock on Sunday, July 28th. The Inspector did not detect any disease, and they were therefore landed early on Monday morning, and again examined on Tuesday morning, having been prevented leaving the port alive in consequence of coming from a Scheduled Country. At the examination on Tuesday two or three presented early symptoms of the plague, and were soon followed by others. Some of the animals having previously been slaughtered, measures were promptly taken to prevent any of the carcases, skins, &c., being removed, the men's clothes also were disinfected. The Local Authority was communicated with, and the place put in charge of the police until a meeting of the Magistrates could be held the next morning. It was then determined to kill and bury all the animals. Their carcases were removed by water to the burial-place, an isolated spot, near to which new docks were being constructed.

The seventh was also *a second* importation into Newcastle from Hamburg. The cargo consisted of 103 German cattle which were landed July 29th. One of the animals on arrival being seen to be unwell, they were detained by the Inspector for a second examination, which proved that cattle plague existed in the herd. All were slaughtered, and so disposed of as to prevent any spread of disease.

The occurrence of these cases among German cattle led the Lords of the Council to issue an Order bearing date July 31st, revoking the Order which allowed Schleswig-Holstein cattle to pass inland after twelve hours' detention at the place of landing if healthy, and by another Order of equal date all sheep and goats brought from any place in the German Empire were to be killed at the Port of entry.

One other importation of the disease has yet to be named. Thirty-five animals were shipped at Cronstadt for London on July 20th, but which were not landed at the Deptford Foreign Cattle Market until the 28th. Five had died on the passage, and were thrown overboard. On being debarked others were found to be diseased. Immediate slaughter was ordered by Lords of the Council, and their carcases so to be disposed of as to give security against the spread of the disease.

Most fortunately in none of these instances did the plague gain a footing in the country. A case, however, occurred in the East Riding of Yorkshire, which was thought might possibly depend on the washing ashore of a Carcass of an

animal which had been thrown into the sea at the MOUTH OF THE HUMBER.

On the breaking out of the Franco-German War Cattle Plague was again widely spread in Central and Western Europe, subsequently prevailing to a most serious extent in France. Under the regrettable circumstances which then prevailed little could be done to arrest its spread on the Continent.

From France the Plague entered Belgium, but its progress was early arrested in that Kingdom, and, fortunately, with comparatively small loss.

As soon, however, as information of its existence in Belgium reached England an ORDER was passed to the effect that all cattle, sheep, and goats arriving at any Port of landing from Belgium were to be forthwith killed.

THIS ORDER proved effective in preventing the re-introduction of the Plague at that time, and in 1872 both France and Belgium were officially reported as being free of the disease.

In continuation of the history of the Plague I venture to add the following particulars of other Importations, although they do not strictly belong to this Autobiography, as at that time I was not holding office in the Veterinary Department.

Early in 1877—probably in 1876—the Plague again crossed the Russian frontier and entered Silesia. It is more than probable that Speculative Cattle Inspectors of that day could easily explain how, why, and wherefore. The fact, however, of its existence in Silesia was soon unfortunately made practically known here by infected Cattle being sent on to Hamburg for shipment to London. At the same time some infected Cattle,—also sent forwards,—were discovered to be Plague-stricken at Goslar in the Hartz Mountains on January 13th. These were all killed forthwith, and their carcases destroyed; and, according to the established regulations of the country, the place they had occupied was cut off from all outside communication by a Military Cordon. Others were also forwarded *viâ* Berlin to Hamburg for exportation to England. At that time Germany was a scheduled country, and as such, Cattle coming from German Ports could only be landed at *defined Ports* and slaughtered thereat; and, consequently, to provide against further importations of Cattle from Hamburg or any other German Port, AN ORDER was issued January 19th, placing Belgium and France under the same restrictions, it being feared that infected Cattle might be sent here from thence.

Denmark and the Netherlands were also informed that unless the importation of Cattle from Germany was prohibited, their importations would be dealt with in the same manner.

These measures were unfortunately ineffectual, as on January 12th prior to the Order a Cargo of forty Cattle had been shipped at Hamburg for Deptford, where they arrived on the 15th. One animal had died on the passage, and others died soon after being debarked. The Port Inspector at once recognised the existence of the Plague, and communicated with the Chief Inspector at the Veterinary Department, the Cattle being in the meantime locked up in a shed. Mr. Duguid was immediately despatched, and on arrival the animals were all slaughtered, their carcases being destroyed by being placed in the Iron Cylinder previously described.

The men also who had been employed in slaughtering the cattle were not allowed to leave the Docks without changing their clothes, those worn at the time being disinfected. The ship also was detained for disinfection.

Notwithstanding these precautions, the plague in some unascertained way was communicated to a dairy of cows at Limehouse, its existence being detected on January 29th by the District Inspector, who had been informed by a dairyman that some of his cows were ill. Finding on his visit that the animals were suffering from the Plague, he at once communicated the circumstance to the Veterinary Department, and I was also requested to see the animals. Confirmation of the Local Inspector's statement being thus obtained, the animals were immediately slaughtered and their carcases destroyed.

To check the further spread of the disease from Limehouse, an Order of Council prohibiting the movement of cattle, sheep, and goats from the Metropolis was forthwith issued. This was followed by other Orders, one of which prohibited the holding of markets and private sales in the Metropolis except under licences granted by the Privy Council.

Notwithstanding these precautions, and others as necessity arose, the disease extended to five other dairies in the Limehouse district, and to two outside thereof.

The knowledge of the reintroduction of the plague created great alarm throughout the country, and at a largely attended Special Council, February 29th, of the Royal Agricultural Society, the matter was fully discussed, and among other resolutions unanimously passed was the

following:—On the motion of Lord Vernon, *seconded* by Lord Eslington—"That the President of the Society be instructed to present a Memorial to the Lord President of the Privy Council, urging upon the Government the necessity of calling upon each Local Authority to inspect constantly every market and dairy within their districts, in order to report upon the condition of the stock in their districts at once, and as often as the Privy Council may require."

By the landing also of some *Infected* cattle at Hull from Hamburg the disease gained a footing in some dairies in that town. The animals were all slaughtered by the Local Authorities directly upon a knowledge of the outbreak being obtained, and the district around the premises declared an infected place.

At a Monthly Council of the Royal Agricultural Society, April 11th, Professor Brown reported that since the last meeting, besides the Hull outbreak, the plague had been detected, March 8th, on a farm at Beelsby, Lincolnshire, which could only be attributed to some persons or materials having come in contact with the diseased animals in Hull.

Also on March 12th the Cows in a large dairy of 123 in Stepney were found to be diseased; and on March 20th an outbreak occurred at Whitechapel in a dairy of thirty-five Cows, and *a third* on March 22nd at Hull in a dairy of eight Cows.

On March 26th the disease was also detected at Shepherd's Bush, Middlesex, in a dairy of thirty-one.

27th.—At Poplar, in a dairy of sixteen; and on the same day at St. George's in the East, among thirteen Cows.

31st.—Another outbreak took place at Poplar among fourteen cows.

April 2nd.—The disease was discovered in a dairy of thirteen Cows in Ledbury Mews.

3rd.—A *second* outbreak occurred at St. George's in the East, among sixty-six.

7th.—An outbreak occurred at Willesden; fifteen cows were slaughtered at once, and others on the following day.

Ten cows in a dairy at Shadwell were found to be affected also on the 7th. None of these cases, Professor Brown stated, could be traced as being due to the movement of diseased or infected animals.

At this meeting of the Council the Cattle Plague Committee recommended, that as Professor Brown's report also contained some suggestions for arresting the progress of the

Plague, a copy be sent to the Local Authorities throughout the country. It was also resolved, on the motion of Colonel Kingscote, that Lord Skelmersdale, President, and other noblemen and gentlemen—members of Council—and myself, officially, as a deputation, wait upon the Lord President of the Council, and "urge the importance of immediate interference on the part of the Privy Council, in order that uniform and consistent regulations might be applied, at least to that part of the country where Cattle Plague prevailed."

In accordance with these recommendations an Order was passed and came into operation on April 16th. By it Government Inspectors were appointed for the purpose of making inquiries as to the sanitary condition of the stock in the Metropolis and its suburbs. Arrangements were also made for the slaughter of the diseased and the burial or destruction of their carcases; likewise for the slaughter of animals which had been in contact with the diseased, and the burning or destruction of manure, offal, and hides, so that nothing but the meat of healthy animals should be removed from an infected place. Arrangements were likewise made to prevent as far as possible the conveyance of the Contagium of cattle plague by the agency of persons and things which had been employed about the diseased. Thus Butchers were to be disinfected before leaving the premises, and the Inspectors to wear waterproof over-clothing and to thoroughly disinfect their clothes before quitting infected places.

On April 23rd seventy-five animals were, however, attacked at Kensal Green, and soon afterwards 130 in the same district, and on April 25th a *second* outbreak occurred at Ledbury Mews among thirty-eight cows, and on May 1st forty-nine cows at Stoke Newington were found to be diseased. In all these cases the animals were killed.

Three other important Orders of Council came into operation on May 2nd. One prohibited the movement of animals from or within the county of Middlesex except for immediate slaughter; a second applying similar restrictions within the Metropolis; and a third providing for the slaughter of all cattle sent to the Metropolitan Market within the Market area.

After a short time these measures, together with the precautions taken by Agriculturists and Cattle-owners in general, sufficed once more to stamp out this fearfully contagious and deadly pest.

To prevent a recurrence as far as possible of infected

animals being brought from Russia direct, or from any contiguous country, in the event of the disease crossing the frontier, an Act was passed in 1878 giving greatly enlarged powers to the Privy Council to deal with the IMPORTATIONS OF ANIMALS from any or all Countries.

(*To be continued.*)

Communications and Cases.

THE SO-CALLED "SUNSTROKE" OF HORSES IN INDIA.

By R. SPOONER HART, M.R.C.V.S., Calcutta.

IN Calcutta, during the hot-weather months, it is a very common sight to see a number of horses lying about on the roads through the town in a state of insensibility, and others dead, having fallen whilst being driven. The nature of these cases by some appears to be very little understood, and I cannot recall any veterinary writer who has referred to them and correctly described them. It is not the sun which directly brings these horses to the ground, but the results which ensue consequent upon work imposed upon them during the prevalence of great heat. I have frequently had as many as 200 of my own horses running about in a paddock for days together, in the height of summer and exposed to the full effects of the sun, and without witnessing cases occurring such as I have referred to. Some years ago I made a number of experiments to demonstrate the effects of exposure to the sun's rays upon the temperature of the horse's body. I tied them in the sun from 10 a.m. to about 4 p.m. The animals so exposed showed discomfort, restlessness, pawing the ground, trying to get into the shade, perspiring, respiration and pulse quickened, and the body temperature rose to 102° and 103° during the course of the afternoon. On the sun going down, and the cool of the evening ensuing, the animals became comfortable and tranquil again, and took their food; beyond this no bad results followed. In horses standing idle in the stable during the hot months the body temperature will also stand a point or more above normal, If you drive a horse in Calcutta, yoked to an ordinary gig, on a macadam road in the height of summer, a distance of six to eight miles on end, and especially if pushed a bit, the

distress will be alarming, and the animal will in many cases stagger as in a state of intoxication, and fall insensible upon the road. It is the distance, the mile after mile, which tells the tale and results in hyperthermia. You can get much more out of a horse that is driven short distances, that is from point to point, and thereby gets a spell—a cooler and breather between times. Some horses will go farther than others, a good deal depending upon the breeding, the pace and manner driven, the state of the road, load, and weather, and if with the wind or against it. A hot day with the atmosphere loaded with moisture is very bad, also a long coat and skin disease, and particularly if the sweat-glands are not acting freely, a state of things very common in the East. If you apply in the summer to any of the Calcutta job-masters and wish to drive to Barrackpore, a distance of about sixteen miles, they do not care for the job; and if they take it their own servant must drive, and will insist upon three changes. I have driven this road a good many times with a team to an ordinary English stage-coach, loaded, and notwithstanding three changes have had to pull up, moisten the horses' mouths, sponge faces, douche the bodies with cold water, and let them rest to cool and get wind. I mention this to show what little work horses can perform in Calcutta compared with animals in England. To what is this attributable? Why, to the rise of the body temperature to a degree inconsistent with the horse's going on; and if not stopped in time they fall insensible, and in many cases die shortly after, with terrible skin abrasions, and joints not unfrequently laid open, from severe struggling on the ground. One may start with an animal in many cases that already has his body temperature elevated, and particularly so if he has been standing exposed any time before starting, and before the horse has been driven far the heat and the exertion bring the body temperature up to 107° or 108° or more, as the case may be. As we are aware, the temperature of the body is the resultant of two processes: (1) those by which heat is gained; (2) those by which it is lost. The balance which ordinarily exists between the two processes is upset in these cases. The heaters have it all their own way; the coolers are insufficient to meet the demands, and the temperature runs riot. The hot humid atmosphere, the temperature of which may at the time be higher than that of the body, is insufficient (notwithstanding the skin is bedewed with profuse perspiration) to hold the body temperature in check, which frequently rises in such cases

beyond the limit of the ordinary thermometer, which is marked to register 115°. It is very remarkable what high body temperature some animals are capable of standing, and at the same time exhibiting no cerebral symptoms and comparatively little distress. I have met with two such cases where the temperature stood at 110°, and in each instance verified by three or four different thermometers. The first was that of an aged brown country-bred stallion, standing about 15·2. He had been flogged and driven to a standstill, the skin of the scrotum was flayed, cut, and bleeding from the thong of the whip. I had the horse taken out of harness. It walked with more or less paralytic action behind; the skin was hot and dry; pulse and respiration quickened, but not excessively, considering the temperature stood at 110°. I prosecuted the driver for cruelty, and he got three months' imprisonment. The second case was that of a bay mare suffering from fever. On the third or fourth day after admission to hospital she gave a temperature return of 110°, and at the same time showing comparatively but little concern. The mare made a good recovery. It is almost unnecessary for me to remark that such cases are exceptionally rare. A horse once "overmarked," or driven till he falls insensible, should he not die, is seldom after fit for much use during hot weather, in consequence of his body temperature running up on the least exertion, being left very soft and much more liable to go down. Many cases terminate in laminitis, from which few recover; others become roarers, and some become paralysed behind, and frequently both. Horses used for long, hard, slow work, that are kept out in the open for some time, and from the nature of the work and exposure the body temperature is kept abnormally high for some hours daily, but does not rise sufficiently to produce insensibility, such animals (country-breds) will in a few months become incurably paralysed behind, and Australian horses turn roarers and also give way behind. The class of the London tram horse bred in Australia stands the heat and climatic conditions of Calcutta very badly, goes off feed in the summer, and quickly falls a victim to the effects of work and heat. The same would happen to the English-bred trammer if worked in Calcutta; a couple of summers would be sufficient to see him rendered useless. This class of horse exhibits a higher body temperature out here than the well-bred one: and not only is this the case when idle, but it also accompanies exposure and work. Such horses are less capable of standing the ill effects of fatigue than well-

bred animals; and one cannot have horses too well bred for use in India. The coarse-bred ones will stand and blow over their feed, and take but very little; with flanks tucked up, their condition rolls off them—and no wonder when the body temperature stands abnormally high for sixteen of the twenty-four hours. The animal is more or less in a state of fever the whole time. Man has contrivances by which he can cool his body and regulate his temperature, *i. e.* swinging punkahs (fans in motion), iced drinks, cold baths; he keeps out of the sun, and when of necessity he goes out, carries an umbrella. But not so with the unfortunate horse: he comes off work hot and done, and, instead of being placed in the open under shade, is in most instances tied up in a foul, badly ventilated stable, and there he stands, unable to cool. The heat of the skin, after a horse has been exposed and working for some time in the sun, is almost incredible. In the cases which go down, placing the hand on the skin is like putting it on the hob of a firegrate, and the first impulse is to quickly draw the hand away. I have reason to believe that the skin in this condition is productive of pain, and colicky symptoms are not unfrequently present. I have seen horses when travelling along in harness, and getting a bit done, coming to the shade of a house, stopping and refusing to budge further, or run off the road to the shade of a tree and there stop. One often witnesses acts of great cruelty in these cases. An unfortunate horse, after going some distance, feels himself done and attempts to stop, but through ignorance the native driver applies the whip more and more as the horse endeavours to pull up and stop. Many cases have I treated where the skin has been covered by dozens of whip wheals. We have pretty well all over India the black water-buffalo (I am not acquainted with its zoological name), which spends about as much of its time in ponds and rivers as it does out. In Calcutta a large number of these are used for heavy draught purposes, and in consequence of their black shining skins not perspiring they stand exposure and work very badly during great heat. The body temperature quickly goes up, the skin becomes like a furnace, pain is evinced, and the distress is alarming. I have seen a pair of these drawing a heavily loaded waggon, distressed, with tongue hanging out, foaming at the mouth, and on approaching a tank or pond alongside the road rushing off into it, irrespective of its depth, in spite of the pulling and howling of the driver, taking him, waggon, load, and all, under water. These animals

suffer more from rise of temperature and exhibit more distress than any others I have witnessed.

The number of horses which become roarers from excessive body temperature led me to publish, some time back, this as one of the causes of roaring. The horses that go wrong in the wind are too numerous for the defect to be satisfactorily explained by hereditary predisposition, and, besides this, we have the medical history of such cases. Again, we have an illustration of the parts that conformation, form, and class play in roaring, for whilst 14 to 14·1 country-bred horses become paralysed behind only, the big ones turn roarers and also give way behind. In these instances no one thinks of attributing the paralysis behind to the existence of an hereditary predisposition, and yet, like roaring, it is paralysis.

The treatment of the so-called "sunstroke" cases must be decisive and quick, and the object is the lowering of the body temperature, and its reduction is attended by a return of consciousness and recovery if the temperature has not reached too high a point, and the animal has not been done almost to death. The first thing is to move the animal to a shady spot or shade him, take harness off and get him off the road if possible, and put him on to a bed of straw or on to the grass, but this is easier said than done. Get two or three men to hold his head down and keep him steady; put hobbles on if necessary. Great damage is frequently done by the patient struggling to get to his feet, and not unfrequently he falls violently and kills himself, injuring onlookers and damaging property. Apply ice to the head, and rub it all over the body and where it can be applied. If you cannot get ice, water must be substituted and dashed over the body till the temperature falls. Water, which often stands at almost the same temperature as the atmosphere, is of little use compared with ice. Be careful not to carry the ice too far, but as you find the temperature falling and the case coming round gradually discontinue the ice. Keep thermantidote playing on the body, and throw up frequent water enemata to which a little ice has been added. Drench with ice-water frequently, but be careful in so doing, for the swallowing is impaired. I have tried a good many drugs for lowering the temperature in such cases, but without avail, and one frequently experiences great difficulty in getting anything down. When I find the temperature falling, consciousness returning, and the case coming round, I generally give something in the way of a "pick-me-up" stimulant. In

some cases after the temperature has been reduced it will start to rise again, and need watching and treating by the cold sheet, iced water, fanning, &c. Some cases are hopeless from the first, and, do all one can, the temperature will not fall, the heart stops, and the patient is dead.

For the removal of my own cases I have an "ambulance waggon," constructed by the Bristol Waggon Works, Bristol, and it answers excellently. It is a four-wheeled waggon, hung about eighteen inches off the ground, with a false bottom which runs on rollers, and which is covered with a mattress. The tray easily pulls out and in, and the prostrate animal is laid upon it and strapped down, and in a minute the patient is inside under cover being treated *en route* to the infirmary. The waggon is always kept ready with necessary things inside it during the hot weather, and it has saved me a good many cases. Horses fall mostly on the rough hard road where no bedding or shelter can be got, and many an animal has incurably damaged or killed itself by knocking about, whereas it might have been saved had an ambulance been in attendance.

I highly recommend these waggons to the notice of the profession, to owners of large studs of horses, and to the Society for the Prevention of Cruelty to Animals. The waggons are most useful, and all that can be desired for conveying lame horses and those which are unfit and incapable of walking. The Bristol Waggon Works Company will, I feel certain, send an illustration of one if written to on the subject.

A COMPLICATED CASE.

By Messrs. Greaves, Faulkner, and Jones, Manchester.

The subject of the following interesting case was a black-and-tan collie dog about eight years old, and belonging to a lady in town. We were called to attend him on July 4th, and on arrival found he was so vicious that it was impossible to examine thoroughly.

History.—The dog was noticed to be ill some six months previously, when, after a long walk, he commenced panting very hard, and it was with difficulty that he could be induced to walk home. The day following he seemed quite himself again, but between that time and the date of our visit he was often ill for days at a time. He always seemed worst after any exertion, such as galloping with

other dogs, and as time went on he got so bad that the owner determined to seek professional advice. Seeing that he was so bad tempered, and there was no one at the house capable of holding him, we advised that he be sent to our infirmary, where we could have him properly examined. On July 5th he arrived here in a conveyance, and was at once examined.

Symptoms.—He was panting very hard indeed, particularly after walking round the yard. He frequently sat on his haunches, and appeared disinclined to move. Auscultation revealed consolidation of both lungs, more pronounced in the left, associated with hydrothorax. Heart-beats were very hurried and irregular. Temperature 102° F. He was constantly trying to expectorate, and occasionally succeeded in doing so. With the exception of sitting on his haunches he stood persistently, and even when under treatment was never observed lying down.

Diagnosis.—Chest disease involving pleuræ and lungs, with heart complications and possibly tuberculosis.

Prognosis unfavorable.

Treatment consisted of full doses of Liq. Ammon. Acet. and Ipecac., with the application of a mustard plaster to his chest. Under treatment the dog took his food well and seemed to improve slightly, but on July 12th, after a few minutes' exercise, he dropped dead.

Autopsy.—Lungs pigmented and partly consolidated; much fluid in the chest. Diaphragmatic pleura was covered by a villous-like membrane. In the heart the mitral and tricuspid valves were considerably thickened. The spleen was studded with nodular growths.

Professor McFadyean kindly examined the lesions for tuberculosis, but failed to find any bacilli. He subsequently examined the spleen, and reported as follows:—On section the tumour-like nodules are found to be not very well defined from the surrounding splenic tissue; in fact, all the normal elements of the latter are visible in them—trabeculæ, red pulp, and Malpighian bodies. The latter are much increased in size and number, and they make up the bulk of the tumour, but the red pulp also shows a marked excess of leucocytes. The leucocytes in both situations (Malpighian bodies and pulp) are of the small uninuclear variety.

PURULENT UTERINE DROPSY WITH CEREBRAL DISTURBANCE—DEATH.

By Hugh Begg, M.R.C.V.S., East Kilbride, N.B.

The subject was a twelve-year-old Clydesdale mare, the property of a farmer.

History.—Eight years ago the mare had a foal, but she was never known to have ejected the fœtal membranes, and, beyond a little stiffness for a day or two after foaling and the occasional passage of some matter *per vulvam*, the owner said the mare appeared so well that no veterinary surgeon was called in to treat her.

In June, 1893, he called with the mare in the milk cart, and complained that, as she discharged so much from the vulva every day, he thought she would have to be put entirely to farm work.

The discharge from the vulva had continued since foaling, but her general health did not appear to suffer, and periodically the discharge would cease—sometimes for four or five months at a time—but would commence again, coming away in greater quantity than before. Notwithstanding this the mare was sleek and fat, but the continual discharge rendered the animal so loathsome that the owner thought he had better have something done for her. My first impression, when I saw her with her hocks and thighs covered with purulent matter, was that she was affected with gonorrhœa; but when told the full history, I concluded that there must be an accumulation of pus in the womb or vagina.

As the hay season was just commencing, and the mare could not be spared, it was arranged that I should defer manual examination and treatment for a week or two. I heard no more of her till September 30th, when I was called in a hurry to see her at the farm, the messenger stating she had taken "staggers."

Found her standing with her hind legs rather wide apart, while with the off shoulder she leaned against the stall. Eyes dreamy looking, sight impaired; partial anæsthesia of skin and mucous membranes. Pulse 60, full and regular. Temperature $102\frac{2}{5}°$. Though her abdomen had the appearance of that of a well-fed animal, she had lost condition since I saw her last. She occasionally took a mouthful of the hay in front of her and ate it quite well, but during mastication of the next mouthful she would

stop, volition seeming to be lost for a time, and when asked to move again she would stagger forward and finish the mouthful of hay. Movements of the vulva indicated genital irritation, while behind her on the floor was about two ounces or so of flocculent pus. With the aid of three men I had her turned out to a grass plot in front of the stable, but the want of co-ordination of movement was so great that she could hardly reach the grass, though her appetite for it was intense, and I was glad to get her safely back into the stall.

Being unable as yet to account for the intoxicated appearance of the animal, I made my deferred examination *per vaginam*, and found a more serious condition of affairs present than I had anticipated. On the floor of the vagina I found a quantity of pus, while its anterior extremity was enormously distended from the projection into it of a dome-shaped dilated uterus, the distension of which was so far advanced as to completely obliterate the uterine cervix and render that part of the womb almost undiscoverable. In the centre of this dome-shaped swelling, which was perfectly smooth, I found a small aperture—the much altered os uteri, through which pus was percolating into the vagina.

Introducing my forefinger through the *os* I found that the womb was filled to repletion, and much distended with a great quantity of thick pus.

Diagnosis.—"Purulent dropsy" of the uterus, the result of "chronic endometritis" induced by the retention of the whole or part of the placenta after parturition eight years before, with either—

Functional disturbance of the brain, probably a form of "hysteria" caused by the genital irritation now so well marked; or

Organic disease of that organ, probably a "pyæmic abscess."

Treatment.—Having informed my client that I did not expect treatment would restore the animal's health, I proceeded at once to draw off the contents of the uterus with my injection syringe, for he was now as anxious to have everything possible done for her, as he was sorry that he had delayed treatment till the brain symptoms had supervened.

In a short time I had drawn off six and a half imperial pints of white creamy pus, and then I injected into the womb a quantity of a dilute tepid solution of Jeyes' fluid, with the result that labour pains were brought on, and she lay

down and ejected most of the antiseptic solution from the womb along with some more pus.

The straining gradually ceased after I administered four drachms chloral hydrate and a hypodermic injection of morphia, and she fell into a quiet sleep. I then blistered her behind the poll, applied mustard across the loins, and left her, with instructions that she was not to be disturbed unless to offer her gruel when the drowsiness disappeared.

Next day (September 21st) I found my patient on her feet, and was told that she had taken gruel, bran mash, and a little hay. Pulse 65. Temperature 102°. But I was not at all hopeful of having even a partial recovery, for the cerebral symptoms were not in the least abated but rather intensified, and the paralysis of sensation was more profound.

I syringed out the vagina, ordered this to be repeated every twelve hours, and prescribed the following medicines:

℞ Ferri Sulph. Exsiccat. . ʒj,
Potass. Nit. . . ʒij.
Pulv. Nucis Vomicæ . ʒj.

M. Ft. pulv. 1. One to be given morning and evening in three bottles of gruel.

Also

℞ Pulv. Sodæ Hyposulph. . ℥j,
Pulv. Nucis Vomicæ . ʒj,

M. Ft. pulv. One to be given daily at mid-day in half a bottle of gruel.

I did not see her again till the 25th, when I considered her worse, though the owner said she seemed to improve during the two days that I did not see her.

Next day about 4 p.m. a messenger came and stated that she had fallen and was busy destroying herself, and when I arrived she was expiring, the bruises on her body giving evidence of a desperate struggle.

Post-mortem.—All the thoracic and abdominal viscera were perfectly normal except the uterus, which was almost as large as that of a mare at the full period of gestation, but was much heavier.

On cutting into it a great thickening of the walls was at once apparent, the section of some parts being quite 1¼ inch.

Both horns of the womb contained a quantity of caseous matter, some of it adherent to the mucous membrane, and in the body of the viscus there was pus of a more liquid character.

The mucous membrane was of a violet tint, and so altered

in structure that I can only describe it as a vast granulating surface throughout.

I regret that owing to the darkness of the night I did not get the brain examined, but incline to think, from the absence of abscesses in the other organs, that it is probable none existed in the brain, and that the cerebral disturbance was sympathetic with and dependent upon the diseased condition revealed in the uterus.

It is perhaps worth mentioning that this mare occasionally came into use, and that in 1891 she was served by a Clydesdale stallion with no bad effects to the latter.

ON MALLEIN.

To the Editor of the 'Veterinarian.'

Sir,—The communication made by Professor Nocard to the International Congress of Hygiene and Demography on the above subject is so important that I take the liberty of sending you a short abstract of his paper and conclusions.

1. The injection of mallein is the best, most rapid and certain means of diagnosis in doubtful cases of glanders.

2. In glandered animals, however recent and limited the lesions, it always produces a characteristic reaction.

3. The reaction is only significant if it is complete, *i. e.* if it comprises (*a*) a rise in temperature of more than 1·5° C.; (*b*) an extensive hot and painful swelling at the point of injection; (*c*) considerable systemic disturbance, such as prostration, loss of appetite, shivering fits, &c. All these phenomena must persist; after twenty-four, thirty-six, or forty-eight hours, prostration is usually still marked, and the temperature remains more than one degree above normal.

4. When the reaction is wanting, one may state with confidence that the animal is not glandered, whatever suspicious lesions may exist (ulcerations of the Schneiderian membrane, suppurating lymph vessels, &c.).

5. To avoid all chance of error in using mallein, it is necessary (*a*) to postpone the trial if the animal is feverish; (*b*) to shelter the animal from atmospheric influences (such as fog, rain, wind, brilliant sunshine, &c.), which of themselves may cause a variation of 1·5° C. to 2° C. or more in the rectal temperature; (*c*) to remember that certain diseases, especially strangles, often lead to great variations

in the temperature of the affected animals; but in such cases the fever is not *continued* like that produced by mallein, and the constitutional disturbance (*c*) is wanting.

6. When all the horses in a given stable are tested with mallein, many react without showing any clinical signs of glanders. If some of these be slaughtered, glanders' lesions will be found in their lungs on *post-mortem* examination, though such lesions may be discrete and only consist of a few translucent centres. But if these animals, instead, be strictly isolated from any chance of further contamination, *only a small number will exhibit clinical signs of glanders;* the others can be returned to their places without danger; they remain healthy, nor do they give glanders to their neighbours. If during their period of isolation they be periodically tested with mallein, the number of those which react diminishes on each occasion; these may be regarded as cured of the glanders' lesions revealed by the first injections.

7. It is possible, it is even probable, that mallein has something to do with the diminution in number and the cicatrisation of the glanders' lesions in the lung, especially when these are recent and limited; but at the present stage of inquiry it is not possible to absolutely affirm it.

8. The systematic use of mallein will render easy the prevention of glanders in the horse.

Your obedient servant,

Jno. A. W. Dollar.

BILHARZIA HÆMATOBIA.

To the Editor of the 'Veterinarian.'

Sir,—I am anxious to know if any correspondents of the *Veterinarian* can give any information as to the occurrence of *Bilharzia hæmatobia* in the lower animals. This Helminth exists very commonly both in Southern Africa and Egypt, and instances must, no doubt, often have occurred in the practice of many readers of the journal who have lived in those countries.

I am, &c.,

F. H. H. Guillemard, M.D.Cantab.

The Old Mill House, Trumpington, Cambridge.

CLINICAL NOTES.

By F. W. Evans, M.R.C.V.S., Stratford-on-Avon.

Hæmaturia—Speedy Recovery.—Subject, grey, aged mare. Very free goer. Had been idle for some days. Started out very freely, went a mile or so, and then was apparently griped, and was got home with difficulty. She then had a draught given, containing Spt. Æth. Nit., Tinct. Opii, Ol. Juniperis, and Tinct. Gentianæ; within twenty minutes, as there was no improvement, the attendant gave a similar draught. When seen by me the mare was standing with her head in a corner, sweating slightly, breathing accelerated, pulse slightly increased, and hard; the muscles of the quarters were hard as a board. The attendant told me that she had just passed her urine, and it was quite dark in colour. I applied a bag filled with hot bran over the quarters, and gave a ʒiv physic ball, and left her, the time being then about 6.30.

At 9 p.m. I again saw her; she was quiet and inclined to eat. I applied Lin. Sap. cum Belladon. to the quarters and left her with the hot bag still on her. Her mucous membranes were brick-coloured; urine still dark coffee-coloured.

The next day there was marked improvement, and the only treatment consisted of a draught containing vegetable tonics. She was seen the following day, and discharged quite well.

By "Eastern County."

Two Cases of Difficult Parturition.—On April 27th, 1894, I received a very urgent message to attend at once a mare unable to deliver her foal. My patient was a seven-year-old strong, well-conditioned cart-mare, free from exhaustion. Upon making inquiry I found that the mare had exceeded by a few days her expected time, and had been in pain about three hours. The foal, to my dismay, presented all four limbs in the vagina, and the very violent straining of the mare had firmly fixed them in the passage. The foal was dead, but judging from appearances and the absence of fœtor I should think it only died when foaling pains commenced. After considerable trouble I found the head, which was turned back on the ribs. I was doubtful if

delivery could be effected in such a position, and thereupon saw the owner, to whom I expressed my fears as to the result in regard to the mare. At his request I proceeded to work. The mare was tied by a strong halter in a corner of a large barn. A sack was placed on the withers, and the middle of a waggon-rope passed over the sack, the ends being brought under the fore-limbs and made fast to a fixed point. In fixing mares in this way it is important to allow plenty of room, as they are almost sure to fall during traction. Light pulleys were attached to the more protruding fore-leg, which was pulled out as far as possible. The skin and muscles above the elbow were incised to the bone, when the limb, including the scapula, was drawn out. The other fore-limb was removed in a similar way. Examination was now made with less difficulty, but the head and neck were quite beyond reach. The hind limbs were secured by cords round the pasterns, and the foal's body was pushed as far as possible back into the uterus. The cords on the hind pasterns were next attached to the blocks and traction applied, when delivery was quickly effected. The fœtal membranes were then removed, and the mare was led into a comfortable loose box. A stimulant was administered, and instructions given as to food and sedative medicine should the mare become uneasy. Next day the mare, to my surprise, showed little indication of the severe strain she had undergone, and a few days later she seemed fit for easy work.

The second case did not terminate so favorably. The presentation was similar to the first—all four limbs—head beyond reach, but in addition there was a rupture through which a piece of intestine passed into the vagina. Uncertain as to the extent of the uterine wound, and as the mare was very strong, I decided to attempt delivery. The fore-limbs were removed as in Case 1, and after improving the presentation somewhat the foal was extracted. When dividing the elbow muscles considerable difficulty was experienced in avoiding the intestine. After the foal had been got away I quite expected the intestine would protrude, but fortunately this did not happen. The mare seemed very depressed, strained a little, and passed urine, but did not appear to suffer severe pain. I saw her next day, when she appeared little altered. Now and then she lay on her side full length. When standing she micturated frequently; bowels free, eating very little; pulse 80; temperature 102°. The mare continued about the same until the fourth day, when she died. At no time was there

any discharge or smell from the vagina. The mucous membranes were not injected, but pale, inclining to yellow.

Post-mortem.—On opening the abdomen a pinkish fluid escaped. The quantity was not less than fifteen gallons. There was severe and extensive peritonitis. The small intestine was inflamed. The rupture, which measured about six inches, involved the inferior wall of the body of the uterus, which was almost free from signs of inflammation.

Remarks.—Before commencing work in any case of parturition I anoint the vulva and vagina, also my hands and arms, with olive oil containing 20 per cent. carbolic acid. Since adopting this practice my cases have been more successful than formerly. The oil, besides being an excellent lubricant, is protective, and, when sufficient carbolic acid has been added, useful in staying septic changes which so frequently attend cases of difficult parturition. I am a great believer in traction by pulleys. Mares always do better after severe pulling than they appear to do after frequent introduction of the hands. Besides, with pulleys the traction is less irregular and more under control than when men alone furnish the power. Another advantage possessed by those who employ pulleys is experienced at night when assistants are not at hand, or when they are overcome with sleep.

THE ROYAL VETERINARY COLLEGE, LONDON.

On October 3rd the Winter Session, 1894–95, was opened by Professor McFadyean, the new Principal of the College. The chair was taken by Professor Brown, C.B., late Principal, who was warmly greeted by the students. Among those occupying seats on the platform were—

Governors :—Sir F. Fitzwygram, Bart., M.P., Colonel Lambert, Army Veterinary Department, H. G. Sutton, Esq.; Professors Power, Shave, Penberthy, Macqueen, D'Arcy Power, Bayne, Hobday, and Wild; Mr. R. A. N. Powys, Secretary.

Visitors :—Professors Simonds and Axe; Mr. Ernest Clarke, Sir Henry Simpson, E. Barnes, Esq., J.P., Captain F. Smith, Colonel Oliphant, Colonel Walters; Messrs. W. Hunting, J. F. Simpson, F. W. Wragg, A. Cope, R. Spooner Hart, J. Roalfe Cox, W. Wilson, N. Almond, R. C. Trigger, J. Abson, J. Malcolm, W. W. Mason, W. Mulvey, A. Rogerson, S. Rayment, J. Rowe, A. Prudames, F. Stanley, S. Villar, J. P. Heath, A. Gosling, &c.

Professor Brown said:—Gentlemen, in opening the proceedings of the day I have to ask you to welcome the new Principal of the College, Professor McFadyean. (Applause.) Without further preface I will call upon him to deliver the Inaugural Address. (Cheers.)

Professor McFadyean, whose rising was the signal for loud and long-sustained applause, said:—Gentlemen, permit me on behalf of the teaching staff to offer a hearty welcome to the students—old and new—at the beginning of another session, and to express a wish that they may during it retain a full measure of health, and profit by its opportunities for study. The session we have met to inaugurate marks an important step in the evolution of veterinary education in this country. Veterinary students must now furnish evidence of having received a general education equivalent to that demanded for the study of law or medicine, and they have to undergo a professional training extending over four years, and pass examinations which are among the most difficult in the kingdom. The more thorough general and professional education now imparted to the student cannot fail to enhance the social and scientific status of British veterinary surgeons, who will now be justified in claiming that they belong to one of the learned professions.

The new arrangement of the curriculum will next year lessen the strain of the third year of study, for hereafter the student will have to devote both the third and the fourth years to the subjects that are at present taught during the third year alone. There are some who think that the addition of a fourth year to the curriculum was uncalled for, unless as a further tax on those wishing to enter the profession, but with this view very few teachers or examiners will agree. For some time past the standard of the final examination has been too high for a three years' curriculum, though it may not have been too exacting as a means of ascertaining whether the candidate was fit in point of knowledge to become a member of the veterinary profession. To have lowered the standard of the examination would, perhaps, have been unfair to the public; and to have maintained it without lengthening the period of study would have been unfair to the student. I therefore trust that the addition of the fourth year of study was a wise action on the part of the Council of the Royal College of Veterinary Surgeons. The most important point in this connection for students now beginning their third year is that it must be one of continuous hard

work if they desire at the end of it to pass the final examination. Perhaps some student of the first or second year may think that this implies that his time may be spent in a more leisurely fashion, but that would be a great mistake. They are already under the operation of the new arrangements, and while these will give some relief hereafter during the final part of the curriculum, they impose an additional burden on first and second years' students; Regarding this feature of the new arrangements it is hardly possible to avoid some misgivings. Zoology has been added to the subjects of the first examination; though, judged by the proportion of failures in that examination, it was difficult enough before. If more than a very elementary knowledge of this extra subject is to be required the new arrangement will prove the reverse of an improvement. It will either entail a still greater proportion of failures in the first examination (through no fault of the student, but simply because the standard of the examination cannot with ordinary ability and application be attained to in one session), or the standard of knowledge in the subjects formerly taught will have to be lowered by way of compensation for the one added. It is a great mistake to suppose that by multiplying the subjects of examination the standard of education will necessarily be raised. There is a limit to what the average human being can learn in a single session, and whenever examinations overstep that limit teaching ends and cramming begins. Anatomy and physiology are two most important subjects, and the study of the former especially demands a large amount of time. It has been said that veterinary students now know less anatomy than the students of twenty years ago. I am quite sure that that is not true; but it must, I fear, be admitted that the practical study of anatomy is not yet prosecuted with as much care and diligence as it ought. Every teacher knows the reason of this. It is because the examination in anatomy, as at present conducted, is about as unpractical as it could possibly be. If the Council of the Royal College of Veterinary Surgeons *wish* to help the teachers to turn out students with a better knowledge of anatomy, let *them* direct that in the oral part of his examination every student shall be confronted with recent dissections, and that the examiners shall use that as the principal means of ascertaining whether the candidate is familiar with the things themselves, and not merely with the description of them given in the text-books.

Leaving these matters of education and turning to a subject that may be of more interest to those whose student days are over, I desire to occupy the remainder of the time at my disposal in making some observations on the contagious diseases of the domesticated animals, and the means of suppressing them. In at least one sense that is a subject very appropriate to the occasion, since we are presided over by Professor Brown, who for nearly thirty years has been directing operations against animal plagues in this country, and who has thereby rendered excellent service to the State. Veterinary surgeons have great reason to be proud and stock-owners to be thankful for the success which has crowned the efforts of the Board of Agriculture to eradicate pleuro-pneumonia and foot-and-mouth disease from this country. The stamping-out system has been characterised as barbarous, cruel, and unscientific, and notwithstanding some striking object-lessons on the futility of attempting to eradicate the purely contagious diseases by any other methods some people at the present time have hazy notions that in the future there will be a great development and extension of protective inoculation as a means of opposing animal plagues. When asked to advise in this matter veterinary surgeons are exposed to some temptation, for the stamping-out of any one of the contagious diseases of animals means a permanent loss of veterinary surgeons' fees. There can be no doubt that a general development of protective inoculation for the purely contagious diseases of farm animals would be a great source of gain to veterinary surgeons, but it is just as certain that it would be a great source of loss to stock-owners. As an illustration let us take the case of pleuro-pneumonia. In France since the year 1882 outbreaks of that disease have been treated by the slaughter of the obviously diseased animals, and the compulsory inoculation of the remainder of the herd. In this country the pleuro-pneumonia slaughter order was introduced in 1888, and that ordained the slaughter of every animal known to have been exposed to the contagion of that disease. What has been the result? In France veterinary surgeons are still making a good thing of inoculation against pleuro-pneumonia, while British veterinary surgeons have no longer any pleuro-pneumonia left to treat. British stock-owners ought to take note of the fact, and give us credit for having advised a course of action that took money out of our own pockets, but saved it to the public.

The brilliant success of the stamping-out policy in the

case of pleuro-pneumonia has induced the Board of Agriculture to attack swine fever in the same way. Every veterinary surgeon knows that to stamp out swine fever is a task of much greater difficulty, but we hope it will be accomplished in the end. Meanwhile it is not likely that the Board will be induced to take in hand any of the other contagious diseases, and it is therefore worth while considering whether any of these can be successfully attacked by veterinary surgeons without the organised direction of the Central Authority. I venture to say that that might be done in the case of two diseases that are at the present time the cause of great loss.

The first of these is glanders. A very few years since it appeared as if glanders could not be successfully dealt with by any other method than wholesale slaughter of infected studs, with compensation from Imperial funds. To eradicate the disease by any other means was practically impossible, because of the difficulty of diagnosis. Abundant experience has shown that to compel the slaughter of the animals obviously glandered may suffice to keep the disease in check, but it is powerless to stamp it out altogether. But the discovery of mallein has put an entirely new complexion on the question. By the aid which that substance affords to diagnosis, any horse-owner can now free his stud from glanders, and keep it free, without having to kill a single animal save those actually glandered. There is still much that we do not understand in the mode of action of mallein, but we do know that for simplicity, safety, and accuracy as a means of diagnosis, it leaves little to be desired. Armed with this substance, any veterinary surgeon can within twenty-four hours point out every horse that is the subject of glanders in any stable. This is information that has been before the reading members of the profession for nearly two years, and indeed before the public also; but, except in a few isolated cases, full advantage of the important discovery has not been taken. I do not know whether this is due to the fact that horse-owners do not wish to have precise information regarding the number of their horses affected with glanders, or whether those who are consulted regarding the disease have neglected to impress upon their clients that there is no other certain means of diagnosis. The former supposition can hardly be correct, for it imputes to horse-owners an almost incredible degree of stupidity. No legal compulsion ought to be necessary to compel a man to do what is obviously best for his own interests, but

if those who have glanders in their stables do not speedily make a more serious effort to eradicate it, the law will have to be altered. As at present administered, the law is certainly defective, for it permits the almost daily sale of horses that are known to have been exposed to the contagion of glanders. This scandal ought to be put a stop to by giving the purchaser of a horse, found by the mallein test to be glandered within a few days of the sale, the right to recover the price paid. This would be only bare justice to the purchaser, and it would have a most valuable effect in cutting off an outlet for glandered horses, and putting the Local Authority on the track of affected studs.

Glanders is now mainly a disease of London horses; the stamping out of it is therefore perhaps not a question of national importance, but that cannot be said of the other disease of which I wish to speak on this occasion, viz. tuberculosis, which is by far the most wide spread and, as regards the loss which it occasions, the most serious of the diseases of the domesticated animals. Probably not less than 20 per cent. of the adult cattle in Great Britain are tuberculous. Can it be stamped out? I believe that that question may be answered in the affirmative. As a first step in that direction we must diffuse among agriculturists correct notions regarding the causation of the disease. The discovery of Koch's bacillus in a sense settled all disputes regarding the cause of tuberculosis, but there is still prevalent both among members of the veterinary profession and among breeders a very serious misconception regarding one factor in the propagation of the disease, viz. the belief that it is frequently congenital. For some time we have had before us evidence that renders that view quite untenable. We know that when tuberculous lesions are sought in calves under a month old they are not found in one calf in a thousand, even when one of the parents is tuberculous. We know further that in cattle under two years of age the proportion of tuberculous individuals is less than 1 per cent., and that it steadily increases with age until among adult cows it is seldom less than 10 per cent., and not rarely 40 or 50 per cent. These facts are quite incompatible with the view that the hereditary transmission of the bacillus plays a *rôle* of any importance in the propagation of tuberculosis. On the other hand, every known fact regarding the incidence of tuberculosis as regards age, breed, and locality is in complete harmony with the view that it is a disease which may be spread with great certainty by housing tuberculous and healthy

animals together, but which has only feebly contagious properties among cattle kept in the open air.

A few years since, even to the most sanguine, the possibility of being able to grapple successfully with this disease appeared very remote, because, in the first place, of the tremendous hold which it had obtained among cattle everywhere; and, in the second place, because of the admitted impossibility of detecting it in its early stage. A tuberculous cow or ox may to the most careful clinical observation appear perfectly healthy, and yet be capable of communicating the disease to its companions. The stamping-out measures that were successful against pleuro-pneumonia could not be enforced against tuberculosis, because it would have entailed the slaughter of nine tenths of all the cattle in the country. But we are now able to show a stock-owner how he may stamp tuberculosis out of his herd at an expense that would be trifling compared with the loss entailed by the present neglect of all precautions against the spread of the disease. In any herd the use of tuberculin will enable the veterinary surgeon to separate the diseased from the healthy, and this, combined with thorough disinfection, will certainly arrest the spread of the disease. As regards the diseased animals, the owner may be left to decide whether he will have them promptly slaughtered or not. The important point with regard to the arrest of the disease in a herd is that the infected animals should not be allowed to mix with the healthy, and above all that they should not be housed with them.

But if tuberculin makes it possible for anyone to free his stock from tuberculosis, it also gives him the means of keeping it free. No one who has a healthy herd should on any account introduce into it an animal that is not free from tuberculosis as indicated by the tuberculin test. Let us hope that some of our celebrated breeders will soon set the example of selling their animals with a guarantee of this kind.

It is curious to recollect the vehemence with which agriculturists urged the Government to take measures to stamp out pleuro-pneumonia, and to compare that with their calm submission to the ravages of a disease that is causing a loss ten times greater than pleuro-pneumonia ever inflicted. The annual loss from pleuro-pneumonia during the last twenty years of its existence in this country probably did not exceed £50,000, but I do not think it is an extravagant estimate to put the annual loss to the agriculturist of this country from tuberculosis at half a million.

Surely that ought to be a sufficient incentive to them to grasp at any means of dealing with the disease that holds out a reasonable prospect of success. But there is another aspect in which this question is important. Tuberculosis is the greatest scourge of mankind as well as of the bovine species, and some think that a not inconsiderable proportion of cases in the human subject are caused by the ingestion of tuberculous meat or tuberculous milk. It is open to doubt whether the prevalence of tuberculosis among human beings would be sensibly diminished by the extinction of the disease among cattle, but the stamping-out of bovine tuberculosis might indirectly have a powerful effect in saving human life by convincing the public that contagion, and not heredity, is the main factor in the dissemination of human phthisis. (Applause.)

The *Principal* then announced the prize winners as follows:

COLEMAN PRIZES.

Silver Medal—Mr. R. G. J. Voisin. *Bronze Medal*—Mr. W. J. Foreman and Mr. H. C. Reeks. *Certificate of Merit*—Mr. W. L. Harrison.

SCHOLARSHIPS.

£25 *per annum for Two Years*—Mr. R. W. Hall. £21 *for One Year*—*The "Centenary"*—Mr. David Crole.

CLASS PRIZES.

Class C.—*Veterinary Medicine*—1st Prize—Mr. M. H. Peele. 2nd Prize—Mr. W. H. Prime. *Materia Medica*—1st Prize—Mr. C. Hoole. 2nd Prize—Mr. W. H. Prime. *Surgery*—1st Prize—Mr. W. L. Harrison. 2nd Prize—Mr. H. C. Reeks. *Pathology*—1st Prize—Mr. A. H. Clapp. 2nd Prize—Mr. C. Hoole.

Class B.—*Anatomy*—1st Prize—Mr. W. J. Browning. 2nd Prize—Mr. A. J. Moffett. *Histology*—1st Prize—Mr. A. H. Berry and Mr. J. H. Wynne, equal. 2nd Prize—Mr. B. Sumner. *Physiology*—1st Prize—Mr. W. J. Browning. 2nd Prize—Mr. A. J. Moffett.

Class A.—*Chemistry and Toxicology*—1st Prize—Mr. D. J. Quinlan. 2nd Prize—Mr. A. F. Harber. *Practical Chemistry*—1st Prize—Mr. S. B. Woollatt. 2nd Prize—Mr. C. E. Perry. *Botany*—1st Prize—Mr. A. F. Harber. 2nd Prize—Mr. J. D. Quinlan. *Minor Anatomy*—1st Prize—Mr. R. W. Hall. 2nd Prize—Mr. A. F. Harber.

Professor Brown, rising again amidst applause, said:—Gentlemen, among the few ceremonies that are observed at this our annual gathering is the formality of asking you to give to the lecturer of the day a cordial vote of thanks. It will be my duty, in asking you to accord to Professor McFadyean a vote of thanks, to mention for your information certain arrangements that have been effected since you left the College for the vacation, and to refer to the provisions which have been made for your benefit. It has been known to a great many of you for some time past

the duties of the Principalship of this Institution have been to a considerable extent performed by deputy. When I accepted the post on an emergency—the sudden death of Principal Robertson—it was clearly understood that my duties in another place would entirely prevent my residing at the College and devoting my whole time to the Institution. I have held the office now for some years, waiting for the opportunity of the Council being able to select an efficient successor. Some short time ago the Royal Agricultural Society of England made a grant to the Institution for the purpose of founding a Professorship of Comparative Pathology, with a laboratory fitted with perfect apparatus. Then search was made for a competent teacher for that department, and the present holder of that position came to the front (Cheers), not by his own action, because he was performing the duty of Principal as well, but his reputation and my personal knowledge of him pointed him out as a fit man for the position. When he accepted the office of Teacher of Comparative Pathology he was known by the Governors as the future Principal of the College. I may ask you to be allowed to assure you that it is not my fault he was not appointed previously. It was deemed advisable that, as a newcomer, he should see his way, and now I am glad to say that the Governors have selected him as their Principal.

I ask you to join with me in our hearty congratulations on his acquiring the position of Principal of this Alma Mater of the veterinary profession. (Cheers.) I cannot tell him that the office is a sinecure from which a man may retire and spend in peace the last years of his life, but I can assure him that it is a tolerably healthy occupation. (Laughter.) Looking for proof of that statement I have to refer to my friend Professor Simonds, now sitting in front of me, and who told us on the very last occasion of his opening address that he came to this College as a student exactly a year before I was born. (Laughter.) There are at this moment three generations of persons who have served, or are serving, the Principalship standing or sitting before you. (Hear, hear.) I can assure the Principal that, so far from its being an occupation from which a man may retire in comfort, he will find—at any rate he will realise from his experience as Principal or Dean of the College—that the work is arduous. He will have a number of conflicting elements to deal with and to console. He will have to meet with differences of temperament amongst those who desire on one part to acquire knowledge—to

impart it to classes whether they acquiesce or not—and the firm determination of others not to acquire anything at all if they can help it. (Laughter.) All those conditions of character will have to be dealt with; and I know that, in wishing him a long and successful life in the work that lies before him, I shall have your heartiest sympathies and support. (Hear, hear.)

Professor McFadyean, in reply, said: Professor Brown and gentlemen, after having intruded myself so long on your notice—and I was sorry to have had to do so—I feel that I dare not sit in silence after the kind language which Professor Brown has given utterance to, and the kindly manner in which you have received what he said. (Hear, hear.) It is another of the many acts of kindness that I have received from Professor Brown since I came here. He has done everything possible to make easy the performance of my duties during the last two years, and I am glad to have this opportunity of expressing my debt of gratitude to him. As regards the circumstance to which he has referred, when I see the list of distinguished men who have held the office from the beginning, Professor Robertson, Professors Brown and the veteran Simonds, I must say that I am deeply sensible of the honour which the Governors have conferred on me. I am also very sensible as to the responsibility which the office carries with it, and I may be allowed to add that I am determined that no opportunity on my part shall be lacking to advance the interest of the Institution, and to perfect it as an instrument of veterinary education. I say that with full consciousness of my own imperfections and with no more sanguine hope than that when I shall have vacated the office my successor, if he mentions those who have preceded him, may regard my name as not unworthy of being associated with those of Robertson and Simonds and Brown. (Loud cheers.)

Sir F. Fitzwygram, M.P.—It is usual at these meetings to propose a hearty vote of thanks to the President of the day, and I am sure it will not be less hearty on this than on previous occasions. It is a task that has to be performed with great delicacy, in fact it is a very difficult task indeed. Having been associated with the College for so many years and having had its interests so much at heart, it must be a delicate and painful thing for Professor Brown to welcome a successor to a position which he has done so much to honour and filled with so much singular grace. Whilst we all regret our loss we share with him

the hope that his successor may be no unworthy follower of him, and that those who may give their time and energy to this College may be able to uphold it in the foremost rank amongst the colleges of the country, and I wish I could say of the colleges of the world. Abroad the State supports the colleges, but I have an idea that those institutions which grow up by themselves answer in the long run better than those which are fostered by the State. (Hear, hear.) I ask you to join me in according a vote of thanks to the late Principal, Professor Brown, for his conduct in the chair.

Professor Brown.—Just one word more to thank you for your kindness, and to assure you, in answer to Sir Frederick's kind remarks, that instead of it being a painful task to me to welcome my successor, it is a pleasing one to me to be able to introduce to you a man whom I am certain will do honour to the institution. (Cheers.)

THE ROYAL (DICK) VETERINARY COLLEGE.

The seventy-second session of the Royal (Dick) Veterinary College, Edinburgh, was opened on October 3rd, when the Introductory Address was delivered by Mr. Thomas A. Dollar, M.R.C.V.S.London, a distinguished pupil and friend of the late Professor Dick, and who graduated at the College fifty years ago. There was a large attendance, the lecture hall being crowded. Lord Provost Russell presided, and among those present were Bailies M'Donald and Gulland, Councillors Cranston, Gibson, Scott, Hunter, and Waterston; Mr. Skinner, Town-clerk; Professor Chiene, Professor Cossar Ewart, Professor Struthers, Mr. Finlay Dun, Mr. James Macdonald, secretary of the Highland and Agricultural Society, and Mr. F. N. Menzies.

Mr. Dollar said: The name of William Dick is by common consent placed at the head of the Scottish School of Veterinarians, and may justly be included amongst those of the foremost men of any country who have devoted their lives to the practice and improvement of this special branch of knowledge. Born at a time when the science of veterinary medicine had made but little progress, Dick was distinguished by the breadth and enlightenment of his views, by his remarkable powers of observation, and by his untiring energy in the pursuit and teaching of his

calling. Though pre-eminently a clinician, Dick was in no respect inferior in general attainments to the most able veterinarians of his time; and whatever their opinion of his political views, none of his contemporaries could question his ability. Many of his compeers were good anatomists, some were skilful surgeons, a few were enlightened pathologists, but, to a knowledge of the subjects they taught and practised not less accurate than their own, he added the further gift of exceptionally rapid and just diagnosis. This was especially marked in determining lameness, and the story obtains credence to the present day that from his room over the archway Professor Dick could detect the lame leg, and even the seat of the lameness, merely by hearing the horse trot in the street below. However that may be, he certainly possessed the powers both of a great practitioner and a great teacher, and combined with these high moral qualifications without which mere learning is of little value. He seldom failed to rouse the sympathies of his pupils, or to impress on them much of his own peculiar character. To all who studied under him he extended his willing assistance in after-life, and the worldly success of his students was often due to the continued and judicious advice he was ever ready to afford them. Arago, speaking of James Watt, said that in the writings or models of that great inventor the germs might be found of all the improvements that have since been made in the construction of the steam-engine, and in like manner it may be said that a vast amount of the knowledge we till recently possessed might be found foreshadowed or suggested or actually adopted in the writings, experiments, or practice of William Dick.

An intense lover of horses, he was often revolted during his younger days by the cruelties practised on them in disease; and having in vain urged on the notice of the public the necessity for systematic teaching in veterinary surgery, he resolved to consecrate his life to the foundation of an efficient college, and to the elevation of the profession he had resolved to make his own. His Memoirs are so well known to many of those whom I see around me to-day that it is unnecessary to do more than briefly sketch his life, but it may be well to show the younger members of the profession, for their encouragement and example, with how few advantages he commenced, and how his great position was built up by unflagging energy, devotion to his students, and high professional integrity.

The house in which William Dick was born has now

passed away, together with many other landmarks of the Edinburgh of my student days. It was situated in the White Horse Close in this city, so named from the inn which once flourished there. The exact date of Mr. Dick's birth is uncertain, though it is known to have taken place in May, 1793, rather more than 100 years ago. His early surroundings were peculiarly adapted for developing his latent powers, and there is no doubt that the natural bent of his mind towards the study of animals received a powerful impulse from his early and constant association with them. The birthplaces of distinguished men always possess a certain interest, and a short description by an eye-witness of the appearance of the White Horse Close towards the end of the eighteenth century may perhaps prove interesting to the rising generation. "A sort of *porte cochère* gives access to a court having mean buildings on either hand, but presenting in the centre a goodly structure of antique fashion, with two outside stairs curiously arranged. A date over the door gives assurance of the seventeenth century, and, judging from the style of building, belonging to an early portion of that age. The ground floor, accessible from the North Back of Canongate, has been used as stables.

"This house, supposed to have been styled the White Horse Inn or Stables, would be conveniently situated for persons travelling to or arriving from London, being close to the ancient exit of the town in that direction. The adjacent Watergate took its name from a horse pond which probably was an appendage to the mansion. In the days of the White Horse Inn, a traveller going to London would present himself at the house, armed with a pair of saddle bags and booted for riding, and engage and mount a suitable roadster which would serve him all the way.

"The White Horse has ceased to be an inn from a time which no 'oldest inhabitant' of our era could pretend to have any recollection of. It is almost a matter of course that Dr. Johnson, on arriving in Edinburgh in 1773, should have come to the White Horse, which was then kept by a person named Boyd. The latter was at one time on the brink of ruin, but being saved by a lucky bet on a white horse, he had, out of gratitude, kept the animal idle all the rest of its days, and had taken its portrait as his sign."

It will therefore be seen that from an early period William Dick had plentiful opportunities of becoming acquainted with horses, not only in the crowded yard of

the White Horse Inn, but in his father's shop, where they came to be shod or doctored.

The boy's childhood was passed in and about Edinburgh, and whilst he imbibed the desire for learning so peculiar to the Scottish character, he was enthusiastic in all manner of sports, and acquired that strong and healthy frame which enabled him to bear the strain and stress of a life of incessant activity and severe mental toil.

His father was an ambitious man, and took care to equip his son with the best general education he could afford, including rhetoric and mathematics, and there is little doubt that during his period of service at home, the young man employed to the full those educational advantages which Edinburgh so plentifully affords at the present day, and for which it was equally famous a century ago. He was especially fond of books on horses, and one of the earliest he purchased was 'Taplin's Farriery Improved.' In 1817 he was introduced by a medical friend to Dr. Barclay's lectures at the Medical and Surgical School of Practical and Comparative Anatomy, which appear to have made a powerful impression on him. Thenceforward he was insatiable in acquiring medical knowledge, and having gained access to the demonstrations of Professor Gregory on the Practice of Physic, and of Professor Hope on Chemistry, he spent his time in going from teacher to teacher like a travelling student of the Middle Ages. A good story is told of how Professor Barclay snubbed some of Dick's fellow-students who thought to detract from his partiality for the young man by informing the professor that he was only a common blacksmith. "Well, well," said the professor, "all I can say is, that whether he be blacksmith or whitesmith, he's the cleverest fellow amongst you."

To complete his education he set out the same year (1817) for London, for the purpose of following the course at the London Veterinary College. Professor Coleman was at that time Principal, having succeeded to the office about 1792 on the death of Vial St. Bel. He was a man of considerable talent, and although he had obtained little knowledge from books he was an original observer, and had reflected much on all that came under his notice. Hence, although in many respects behind the knowledge of the day, he had peculiar and extensive funds of information. Like his predecessor, St. Bel, he seems to have devoted his attention solely to the horse, to the utter neglect of other domestic animals; and at the time William

Dick arrived in London the bi-weekly lectures dealt exclusively with equine medicine. Professor Coleman was then assisted by Mr. Sewell, who afterwards succeeded him, and judging from the criticisms which appeared in the pages of the *Veterinarian* at a later date, the instruction was very defective. Such as it was, however, Dick enjoyed it to the utmost, though we often find him speaking of it in letters to his father in terms which throw a curious side light on the originality and sturdy independence of his mind. From one of these letters I quote the following:

"Professor Coleman was ordering a horse's soles to be fired, and I asked him how it would act. He said it would harden the sole, but I asked him if it would not produce a greater growth of horn. He said no. This was a flat-soled horse, and a newish plan to harden the sole. We have another one which is foundered, or, as they call it, with inflamed laminæ; so I asked him if thinning his soles was a good practice. He said no—which seems to be a change of his doctorings."

Whilst at Camden Town he worked unceasingly, and lived in the simplest manner, part of his dietary consisting of meal and potatoes, being forwarded from home by a Leith smack. From his letters it would appear that he not only noted at full length the lectures of the professors, but that he kept a very perfect case-book, in which were recorded the symptoms, progress, and treatment of the patients, as well as his own reflections and suggestions. In summer he rose at dawn, and commenced to transcribe and study the previous day's work. At seven he breakfasted, and at eight was in attendance at college either to review the hospital patients or to see the fresh ones before the professor appeared. Thenceforward until evening he was to be found at college, either at lectures or in the anatomy-room. His evenings were occupied in study, which seldom terminated before midnight. It must be remembered that at that time the amount of knowledge possessed on veterinary subjects was very meagre, the chief works in English being general treatises on horsemanship, like those of Clater, Stevenson, and Topham. A few useful books on cattle medicine had, however, been published, and on the Continent several magnificent additions had been made to veterinary literature, chief of which was Solleysell's great work on the horse. The principle that the estimation in which any object is held is enhanced by the difficulty of obtaining it, added zest to the young man's study of veterinary medicine, which he pursued with extraordinary

ardour. Having acquired all the information which it was in the power of Professors Coleman and Sewell to impart, William Dick presented himself for examination, and on the 27th January, 1818, obtained his diploma. He soon afterwards returned to Scotland.

It was at this time that his course in life was determined. Putting on one side the choice of private practice, in which he might have amassed a large fortune, he adopted the advice of his friend, Professor Barclay, and devoted himself to the task of raising—I might also say creating—the veterinary profession in Scotland. In the year 1819 there was no veterinary school in Scotland, while the entire list of qualified practitioners scarcely comprised a dozen names. The practice of the art was confined to farriers, cow-leeches, shepherds, and wise women, who, whilst ignorant of the rudiments of medicine, in many cases practised most barbarous outrages on the patients that came under their hands. A writer on horses—a Mr. Lawrence—gives an amusing account of his experience with one of these cow-doctors in a work published in the year 1810. An infectious disorder had broken out amongst his pigs, and whilst many died, the survivors remained in a very unthrifty state. The weather was hot and the styes full, and Lawrence having consulted his own surgeon, received the very wise advice to give the animals plenty of fresh air and to administer laxative medicines. His overlooker, however, had heard of a famous cow-leech or farrier at a distance of about forty miles, a man of such sovereign skill that no disease could baffle him, and who, the overlooker shrewdly observed, must surely know better how to treat pigs than the surgeon, who only knew how to doctor Christians. As Lawrence remarks, he was, of all mankind, the least likely to have faith in the possibility of modern miracles. However, he acquiesced, the man of practice was sent for, and after making a bargain for his fee he set out with ample promises of putting everything to rights in a short time. Lawrence had already repented more than once, and the first conversation he had with the doctor evidently showed he had just cause. The quack talked as such men generally do who are totally ignorant of the nature of diseases and the properties of medicines, who are not apprised of the necessary connection between cause and effect, and who never fatigue their brains with studying the doctrine of analogies. I cannot do better than use the author's own words in describing the result. "This skilful leech went

into my styes and cut off about half the tails from a considerable number of the fattest of my hogs. About an hour afterwards I was sent for in great haste to bind them up, that the patients might not bleed to death, and there the matter ended, for I have never set eyes on the doctor or heard tale or tiding of him from that hour to this."

The works written by these practitioners, for they certainly produced them, were of the most extraordinary character. They seem to have been put together by some penny-a-liner or apothecary, to whom the farrier or leech poured out his twenty, forty, or fifty years' experience, much as one might turn forth the contents of a rag-bag, and who expunged, added, or amended, as he thought necessary, and then arranged the 'New and Original Practical Treatise,' and put it into intelligible English. I was lately perusing such a work. It is a diminutive but high-priced book of 130 small pages, and was written by a person named Downing, a country cattle doctor of note. The author seems to place particular importance on his recipes, and in some cases they seem fairly appropriate, but his observations are few indeed when considered as the professed result of many years' practice, and the description of the pathology and symptoms are so vague and confused as to afford little information, but the doctor indulged in fine words, which doubtless helped to sell his book. The general character of the work and the pathological information of its author are perhaps best illustrated by the following short quotation :—"Dysentery.—The cause of this disease may be anything that constringes the external habit, either constipating or lubricating the fluids beyond their due tone, forcing an insurrection upon the vessels so as to rupture them," &c., &c. He then prescribes a draught of dragon's blood, nitre, roche alum, bole, rhubarb, and red sanders; next an injection, afterwards nitre, prepared steel, red sanders, and bole; and lastly, a purging draught composed of Epsom salts, bole, and cream of tartar. Upon the virtues of this latter, which he seems to view as an universal cure-all, the doctor holds forth in the most inflated terms.

These illustrations exhibit the ignorance and incapability of the farriers and cow-leeches of the last century. These charlatans Dick superseded. By his indefatigable exertions he qualified himself, as already indicated, to train a generation of practical veterinarians, and thus greatly benefited the agriculture of his country.

Dick's beginning was necessarily a modest one. Under the auspices of a Mr. Scott, who was then establishing a School of Arts in Edinburgh, he delivered a course of lectures during the session 1819–20 in the Freemason's Hall, in Niddry Street; but this institution not succeeding, he took an unfurnished shop in Nicolson Street, where he continued his course, at which we are credibly informed he sometimes had but one attendant. Looking round me to-day on the distinguished audience assembled in this building to do honour to the memory of Professor Dick, it seems difficult to believe that seventy years ago he was an unknown man in an obscure quarter of this town struggling to advance his calling, and only too happy when his efforts were rewarded with the attention of a single auditor.

He never, however, became discouraged, and in 1821 we find him teaching under the patronage of the Edinburgh School of Arts, whilst the next year he lectured independently at the Calton Convening Rooms. Here he had better success, and obtaining the assistance of the Lord Provost, endeavoured to induce the Senatus Academicus of the Edinburgh University to endow a Chair of Comparative Anatomy, embracing Veterinary Medicine and Surgery. The Senate, however, declined, thinking it better that any Veterinary College should be independent of the University.

In 1823 the Highland and Agricultural Society, which has always evinced so enlightened an interest in the welfare of the rural population, conferred on Mr. Dick their patronage and support. Then commenced that period of prosperity which has never since suffered interruption. The course at first consisted of anatomy and clinical instruction, and was in 1827 supplemented by admission to the lectures of several medical professors.

About the same time there was built at Clyde Street a temporary hospital and forge, which in 1833 were replaced by a more pretentious building, erected entirely at Professor Dick's expense at a cost of £2500. The course of study at this time comprised not only the diseases of the horse, but some reference was made to those of the other domesticated animals. In this respect the instruction was in advance of that at Camden Town.

An army veterinarian, Mr. Castley, in 1830, wrote an interesting and somewhat sarcastic letter to the *Veterinarian* on the newly established college, in which he says:

"There is no room for Mr. Dick's chair within the walls of the great, the proud University of Edinburgh. The elder sister seems to disown the relationship, or, secretly ashamed of the Cinderella, scarcely acknowledges the connection.

"Here then, even at the headquarters of medicine, veterinary surgery may be said to stand entirely on its own bottom; and it has to be tried by the measure of its own utility. It has not been taken in tow by the elder science —it has not experienced the fostering care of academical honours—it lacks the polish and advantage of a gown—it presents rather a rough exterior, but still it seems to thrive. Mr. Dick has a very considerable and yearly increasing class. The Edinburgh school is entirely of his own creation; and I am happy to see he is likely to reap the fruits of his great perseverance, his zeal, and his talents."

Castley's description of the old Hall, which was swept away many years before my time, is also exceedingly interesting:

"You may fancy to yourself," he says, "a room of no very great dimensions in an old and apparently long untenanted house in Clyde Street. You enter it from the street door and are immediately struck with the delightful confusion which seems to reign within. Skeletons of all descriptions, from a horse to an ape, not ranged in regular order 'all of a row,' but standing higgeldy-piggeldy, their ranks having been broken by the professor's table, and their heads looking in all directions, as if thrown together by chance. Over the professor's 'devoted head' is seen suspended an inflated and injected intestine with its mesenteric expansion dangling in the air, something like a lure for flies; whilst all around the room, and especially in the corners, are heaped together vast quantities of diseased bones and other preparations, seemingly without order and without arrangement. Here we see no numbered specimens—no classification of morbid anatomy—no description book—all of which would tend to give the collection a *pretty effect;* yet the lecturer has not only sufficient, but abundance for his purpose. His table is always covered with choice preparations. Of that portion of the house which is set apart for the audience, the best thing I can say is that whenever I have dropped in I have always found it *remarkably* well filled. It is fitted up with rough deal planks, set upon as rough props; the seats rising tier above tier until your head touches the top of a very dark-

coloured ceiling. Of my friend Professor Dick I may be allowed to say, without suspicion of flattery, that he appears to know his subject perfectly; . . . and as a lecturer every year he is improving. His anatomical demonstrations are particularly clear, instructive, and satisfactory, and he seems to spare no pains in well grounding his pupils in this, perhaps of all others, the most necessary part of elementary knowledge."

In 1833 Professor Dick became one of the editors of the *Veterinarian*, which had for a long time been agitating that the teaching curriculum of the London College, instead of being confined to the horse, should be extended to cattle and sheep.

In 1838 he succeeded in obtaining the recognition of his diploma as qualifying for entrance to Her Majesty's Army and that of the Honourable East India Company—a triumph indeed—for heretofore Professor Coleman had entirely controlled the examinations and reserved for his own pupils all such appointments. A year later, in 1839, Mr. James Robertson, a graduate of the Dick Veterinary College, passed his examination and was gazetted.

In 1844 the Royal Charter was obtained, which raised the veterinary art to the dignity of a profession. In this document the Edinburgh College was recognised as in all respects equal to that of London, and obtained the same privileges and powers. Professor Dick became a member of Council of the newly constituted Royal College of Veterinary Surgeons, and continued to hold office until his retirement by rotation in 1847.

A most important event in the history of this College was the appointment in 1844 of Professor Barlow to the Chair of Anatomy and Physiology, and of Dr. George Wilson, afterwards Regius Professor of Technology and Director of the Industrial Museum of Scotland, to that of Chemistry. These gentlemen were in 1849 joined by Mr. Finlay Dun, whose name has been a household word in agricultural circles, and whose works on Materia Medica and kindred subjects have now for many years enjoyed a world-wide circulation.

During the first twenty-five years of his teaching Professor Dick was almost unassisted, and personally instructed his students in the narrower curriculum, which then comprised anatomy and physiology, medicine and surgery.

But it redounds greatly to his versatility and energy that, thus single-handed, he turned out so many capable men who attained first-class positions in their respective

spheres. Of these may be mentioned John Steele, of Biggar, a member of the Board of Examiners appointed by the Highland and Agricultural Society; William Aitken, who was associated with him as examiner in cattle pathology; William Anderson, of Glasgow, who became Government Inspector for the County of Lanark; Cuthbert Simpson, John M'Lean, and John Lawson, all of whom acquired large practices. John Lawson was for many years Chairman of the Highland Society's Board, and afterwards occupied an equally honourable position on the Board of the Royal College of Veterinary Surgeons. In 1840 William Worthington passed, and afterwards became clinical assistant in this College; in 1842 Robert M'Robie graduated, and in 1844 John Borthwick, of Kirkliston, both of whom subsequently were members of the Highland Society's Examining Board; while Peter Taylor, of Manchester, who received his diploma in 1844, signalised himself as a distinguished practitioner.

All these men were imbued with Professor Dick's characteristics in a high degree. They have been specially marked by self-reliance, force of character, and clear-headedness, as well as by that tact which is so essential to the practitioner, whether of human or veterinary medicine.

In 1849 the teaching staff had been strengthened, as I have shown, and consisted of Professors Dick, Barlow, Finlay Dun, Worthington, and Dr. Wilson. There can be little doubt that, in addition to the paramount influence of the old professor, these assistants greatly helped to mould the minds of later students. Amongst these are some of the brightest lights of modern veterinary science. I may mention the names of Francis Collins, J. B. Hallen, George Fleming, James Collins, and James Lambert, all of whom have risen to the position of Principal Veterinary Surgeon in Her Majesty's army, and the latter of whom still holds that most responsible and honourable position.

Of literary men of this period I would recall Mr. Finlay Dun, of whom I have previously spoken; Sir Frederick Fitzwygram, whose work on 'Horses and Stables' has attained a circulation unprecedented amongst veterinary publications; Dr. George Fleming, who has contributed so much to our professional literature; Professors Robertson and Williams, whose writings have tended so greatly to the advance of our calling; and Professor Strangeways, whose 'Notes on Anatomy' still forms a valued text-book.

Gentlemen, this College has moreover given birth to some of the most distinguished teachers of our art. From it have sprung Principal Williams, of the New Veterinary College, Edinburgh, who recently has also been signally honoured with the robe and office of Town Councillor. Principal McCall, of the Glasgow College, acknowledges this as his Alma Mater. Principal Andrew Smith, of Toronto, and Principal M'Eachran, of Montreal; Professor Charles Rutherford, of Aldershot; Mr. Forbes Burn, of Melbourne; and Mr. Primrose M'Connell—all received their education within these walls; likewise my friend Professor Baird. The several notable men whose names I have enumerated, and who were or are upholding the reputation of this school in every quarter of the globe, have inherited in great measure the sterling qualities which distinguished Mr. Dick. In none were power of brain and goodness of heart more notable than in my dear friend and old fellow-student, Principal William Robertson, of the London College, whose mantle has descended on your former most talented teacher, Principal McFadyean.

Besides these professional students the school has done good work in imparting the principles of the veterinary art to country gentlemen, agriculturists, and young men destined to proceed to the colonies, very many of whom have declared that their knowledge acquired here afforded them a wider field of general interest, and was of signal benefit to them throughout their varied careers.

In 1866 Professor Dick passed away, greatly lamented. By his will he endowed this College, and bequeathed it in trust to the Lord Provost, Magistrates, and Town Council of the City of Edinburgh. Since its foundation the College has been several times extended and partially rebuilt, and in 1886–87 it underwent such complete reconstruction as practically to have become an entirely new building. Miss Dick, who had never ceased to take a lively interest in the welfare of the College, died in the year 1883 at the advanced age of ninety-two, leaving to the endowment fund a further generous addition.

This College presents an unique example amongst the veterinary schools of the world, for whilst it has never received one penny from the State it has steadily increased in scope and efficiency, and its history has been one of uninterrupted and solid progress. During Professor Dick's lifetime, and since his death, it has educated upwards of 1500 veterinary surgeons, and numbers amongst its graduates those occupying the highest and most responsible

positions in the profession, both at home and abroad. Its reputation established by Professor Dick has been fully upheld, and the attendance of students last year was the highest attained.

There has thus, gentlemen, been bequeathed to you ample accommodation in the way of lecture rooms, laboratories, dissecting rooms, museum, for your ever-widening studies. You have a capable and zealous teaching staff. The achievements of the many successful men who have been educated here should stimulate your exertions, and moreover you have for further guidance the admirable example and the sound precepts of the founder of your College.

The only present cloud or cause for regret is that Principal Walley, who has for many years successfully directed this great institution, is unable to be with you to-day. May his absence be of short duration, and may he return to you fully restored in health, and ready again to take up those duties he has always so faithfully discharged.

If William Dick could return to life and stand amidst us here to-day, he would see great improvements. He would find an united profession working harmoniously together, with the attention of its members increasingly directed, as time rolls on, towards the prevention as well as the cure of disease. He would hail with special delight the work of Pasteur and the experiments and researches of Sir Joseph Lister, for such experiments are not sterile, but have a direct bearing on practice. He would rejoice in the wider horizon that has been opened up by the more accurate investigation of disease with the aid of the microscope, and of such instruments as the thermometer, pleximeter, and the stethoscope. He would, I think, be lost in amazement at the minute and numerous details now considered requisite for the satisfactory consideration of any well-described case. But I can conceive nothing that would have been a greater pleasure to him than to enter the doors of this building and see the still-extending and still-developing outcome of his energy and self-denying spirit.

To those of my audience who this day stand on the threshold of their professional career, I earnestly commend the example of Professor Dick. His life teaches that however lowly the beginning, however great the obstacles to success, nothing is impossible to the man who firmly resolves to conquer. Let them, therefore, always bear in mind his early struggles and final triumph, and remember

that they can best honour his memory by employing to the utmost the advantages he spent his life in providing for them.

I have now almost fulfilled the duty assigned to me.

I must, however, thank you for the patient hearing you have given me. I have experienced much pleasure in the preparation and delivering of this address, and I feel that our presence here to-day is a homage to the founder of this institution, our great teacher, the illustrious master in our noble craft—William Dick.

At the close of his address Mr. Dollar presented to the Trustees the portrait of the late Miss Dick, and spoke as follows:

My Lord Provost, Ladies, and Gentlemen,—The College at which we are educated is affectionately styled our Alma Mater. In coming to this school I found not only an Alma Mater, but a real mother, and that mother the sister of the founder, Mary Dick.

When I entered as a student Miss Dick was not quite a young lady, but was active, smart, and trig. Besides being a good housewife, she concerned herself with everything that went on within the College walls, took the greatest interest in the welfare of every student, made herself acqnainted with all their outgoings and incomings, was not slow to note peccadilloes, and to reprimand the idle, the noisy, or the dissipated. But her anxiety for the real good of her protégées made her kindly and helpful when they were in sickness or trouble.

Her devotion to her brother was unbounded. At his death she retired to a house built by him at Burntisland, where for many years I visited her annually, with my friend Mr. Finlay Dun, after the Highland Society's examinations. To the end of her life, which extended to the long age of ninety-two, her interest in the old place continued; she delighted to have any news of it, and of the students and how their examinations had been passed.

One half of her property she devised to the College. The portrait now to be unveiled I had painted by Mr. J. E. Christie, of London, and it gives a very good idea of Mary Dick.

It will, I trust, keep green in the minds of many generations of students the memory of a lady who, during nearly fifty years, exercised so beneficent an influence on those connected with this institution, and with great pleasure I now present the portrait to the College.

Mr. Colin Baird presented a companion picture of Professor Dick.

The Lord Provost (Sir James Russell) thanked Mr. Dollar for his admirable address and for the picture of Miss Dick; and a vote of thanks was accorded to Mr. Baird for the gift of his picture of the Professor.

In the evening Mr. Dollar entertained a company of about seventy gentlemen at dinner in the Balmoral Hotel. The company included the Lord Provost of the city (Sir James Russell); Bailie M'Donald, Dean of Guild Miller; Mr. James Colston, and other members of the Corporation and of the Dick Trust; Sir James Gibson-Craig, Bart.; Professor Bailey Balfour; Professor Cossar Ewart; Mr. James Skinner, town-clerk; Mr. Adam, city chamberlain; Professor Struthers; Professor Chiene; Dr. James, Edinburgh; Dr. William Craig, Edinburgh; Mr. Finlay Dun, Mr. R. Rutherford, and Captain Moore, Edinburgh; Chief Constable Henderson, &c. Mr. Dollar occupied the chair, and the croupiers were Professor Mettam and Professor Aitken, of the Dick Veterinary College.

THE VETERINARY COLLEGE, GLASGOW.

The Winter Session, 1894–5, commenced on October 3rd, and the Inaugural Address was delivered on Friday, 19th October, by Professor Limont, M.A., M.B. The Chair was taken by Bailie Graham, and the company present included Principal McCall, Professor Williams, Edinburgh; Rev. David Watson; Mr. Young (*N. B. Agriculturist*); Messrs. Pottie, McGeoch, J. B. Hamilton, T. Hamilton, McDougall, H. Begg, Frew, Dunn, and Weir; Professors J. McJ. McCall, King, Aikman, and Murphy; and Mr. Dobbie, Secretary, and a large number of students.

Professor Limont said: After ten years spent in teaching medical and veterinary science, and after long experience of examinations, both as onlooker and examiner, it is again my duty to deliver the Introductory Address in this College.

We are, this winter, face to face with a new order of things. In the light of these ten years I propose to consider certain matters that affect you very much. After passing a much stiffer examination (the same as that imposed upon medical students), you are to study for four years instead of three, and to pass examinations on extra subjects of study. This means for you a serious expendi-

ture of time and money. Whether or not the public will make this up to you in more fees and better fees is a moot point which I had rather not discuss. Time will show. But the money value of animals puts a serious limit to veterinary surgery; if an animal is worth £19 it is of little use to be able to cure him for £20. The son of a wealthy soapmaker may (or may not) be worth £120 as an army recruit, but his mother will pay a good deal more to save his precious life. And people begin to think of doing their own doctoring all the sooner when they themselves are not the patients. It is alleged that doctors never take any of their own medicines, and there is a little truth in the accusation. For similar reasons many a man who would not care to practise upon himself is yet very fond of dosing his neighbour, his man-servant, and his maid servant, his ox or his ass, or anything that is his neighbour's.

Until the other day an ordinary medical student going up for a mere pass diploma, got off with a strictly limited examination in chemistry, none in botany, and none in zoology. The veterinary student got a great deal of chemistry, a great deal of botany, but no zoology. Now (on paper at least) both are to suffer alike; they are to have chemistry (with some chemical physics), and biology in the form of botany and zoology. If the new veterinary examinations upon these three subjects are to be on anything like the old scale for chemistry and botany, the first year's men will be overwhelmed.

I hold that the ordinary medical student has next to no need of botany and zoology. It is a little different in the case of the veterinary student, for he has more to do with grasses, grains, poisonous plants, and parasites. But he has only four years against the medical student's five; and instead of dealing with two animals (man and the dog) he has to take up man, horse, ox, sheep, pig, dog, cat, and even birds. As an anatomist and physiologist he is not likely to be so narrow as the medical student; in other words, he has less need of zoology. One argument for zoology I can understand. When the retired naval officer is in full charge of the pleuro-pneumonic cow, the veterinary surgeon will be able to apply for the management of the oyster beds. These new arrangements begin with a much stiffer preliminary examination—one that will bar out many men. After many years' experience I have come to the conclusion that you will never get much education out of a preliminary examination. The average schoolmaster and the cheap crammer put boys through, but they do not

educate them in the process. The real educating has to be done in the first college; and our men's first college is almost always the veterinary college.

The task of the teachers during the earlier years is therefore no light one, and it is made all the heavier by the necessity for training the students in the contemptible art of answering questions, written and oral, sensible or ridiculous. There seems to be an idea that a heavily loaded first session is useful in turning back inferior men, thus saving them further loss of time and money. But what about the good and very good men? Are they not worthy of more consideration than inferior men? If you have a number of subjects, each with its difficulties, each with its mass of details, even a very good man is liable to be plucked by accident. A stigma is upon him henceforth, and it is well if he does not become more or less a "chronic." I often think that there should be something of the nature of a First Offenders Act for those who trip at a mere first professional examination. Had I my way, I would have first year's men study nothing but anatomy, physical science, and elementary chemistry.

The anatomy of the bones, joints, and muscles is a capital subject for young students. It makes them use their eyes and fingers; it is a subject that can be treated thoroughly and honestly; its usefulness is plain to the dullest and laziest man that ever hunted an excuse for not working. Physical science (natural philosophy) is an exact science, and quite outside of its practical use is much wanted to keep the mental balance of men dabbling in so many inexact sciences—botany, zoology, anatomy, physiology, pathology.

I am very glad to see that it is making its way into the curricula and professional examinations for the higher medical degrees. The scraps of this science got up for the preliminary examination, or picked up in the chemistry class-room and elsewhere, never did much good. The science must be learned as a whole.

The ignorance of physical science displayed in books dealing with anatomy and physiology is appalling. Take the subject of elasticity for instance. Everybody talks about it; nobody studies it. There is a tissue described as "elastic tissue" in every text-book, but so far as I remember there is not in any text-book the slightest proof given that this tissue is more entitled to the name than any other. The power of a mere name is great. I have seen it argued in a pathological discussion that a certain

structure was not elastic, because it did not contain this so-called "elastic tissue."

According to books, the limbs of an animal are made up of a number of levers worked by muscles, and of course the stale, tiresome, and purely popular classification of levers into three orders is duly given in the old irritating and misleading phraseology. It may be taken as pretty certain that the writer who is great upon these orders has never heard of the "movement of a force about a point." Of course there are other machines in the body, but they are never even mentioned. There is, for instance, the couple, which is common enough. Then there is the knee. Watch a lorry horse starting a heavy load, and if you know anything of dynamics you will own that it is not for nothing that the carpus of the horse is called his knee. It is a knee. Many writers seem to draw the terms of physical science from a kind of mental lucky-bag. Any word will do, but "weight" and "force" are specially useful. They stand for anything. A favourite principle is that of the "conservation of force." But in the words of two distinguished physical philosophers, "the sole recorded case of true persistency or indestructibility of force which we recollect having ever met with occurs in connection with Baron Munchausen's remarkable descent from the moon. It is no doubt a very striking case, but it is apparently unique, and it was not subjected to scientific scrutiny." The Baron seems to have a number of relatives in this country.

There is a wide field for the application of physical science to pathology. When certain epithelial cells go wrong and their misbegotten progeny replaces bone with cancer, the softened shaft of the bone may break under the action of a force that would not harm a healthy bone. Then the vital activities of cells have another innings at the seat of fracture. This is a simple case, but it is an illustration of the truth that in tracing the course of pathological change we have to deal with the behaviour of the cells (behaviour to which physical science cannot be applied), and with what happens to the diseased mass under physical laws.

Again, disease may be started by undue physical conditions acting on a healthy part. A muscle, for instance, may be strained or torn. Then the cells have an innings, and are active for good or for evil. I say for good or for evil because the idea of a *vis medicatrix naturæ* is absurd. Sometimes the cells of an injured part tend to put things

right, sometimes they do not, and sometimes their activity is positively mischievous. A clear understanding of elementary physical science seems to me to be necessary for every pathologist who would try to distinguish between distortion produced by the mere growth or behaviour of cells and that brought about by physical forces acting upon a part. For example, he should know what is meant by "shear."

In the street and the stable physical science is not less useful. What is wanted here is especially a clear understanding of the doctrine of energy and a fair knowledge of dynamics. Many years ago Brunel, the famous engineer, wrote an article upon draught, as an appendix to Youatt's treatise on the horse. He did not seem to think much of it, for he left it unsigned. The cycle was undreamt of in those days, yet Brunel described and figured a wheel with iron spokes set like those of the modern cycle. Of course in this wheel there is no "dishing," with its inevitable loss of energy by friction. And he showed, in the scientific language of the day, that an elastic tyre would not increase the draught. Carriages remain much what they were in Brunel's time, but you know what the modern cycle (running on the same roads) has become. In draught you have two objects in view. First, to lessen the expenditure of energy by the horse; second, to save the horse from the injury done by sudden and violent efforts. Physical science decides whether any particular arrangement works for good in either or both of these directions, but it does not decide that such an arrangement should be used. The Glasgow lorry is bad for the horse, but because the streets are fairly smooth, not very bad. Accordingly, the great convenience of the low-level platform overcomes the scientific objection to the low wheels. It is otherwise in New York. There and elsewhere the state of the streets, and certain other circumstances, call for a high-wheeled waggon. In cases like these, real (though simple) science tends to keep a man straight, and to make him practical. It certainly makes him disregard the ridiculous rubbish written upon the subject.

Gentlemen, the examining body and the teaching schools are often twitted with turning out men who may know some science, but who are certainly not fully competent practitioners, or—what is not exactly the same thing—suitable and profitable assistants. And it is interesting to notice that Mr. Fleam's (anonymous) letter in the *Veterinary Record*, describing his very latest assistant, is plaintively

echoed by Mr. Sawbones in the very next number of the *Lancet*. But would not either of these gentlemen feel rather at sea, if suddenly set down in a strange surgery in a strange countryside, and with perhaps a very strange man for a principal? After all, the public do not expect a young man to be fully competent in any profession. If one gets into trouble he does not retain counsel for his defence on the theory that a man who was called to the bar only last week cannot have forgotten much of his law. And young men cannot help looking young. Twenty-one will not pass for forty. A few weeks ago I was growling to a lady patient about the inconvenience of increasing bulk. "O, doctor," she said, "you shouldn't talk like that; it makes you so much more impressive." Dr. Oliver Wendell Holmes says, in one of his books, that every physician ought to be bald. I have known the examiners allow certain students time to qualify, but probably they will agree with me that most students are bald enough already—on paper. Impressiveness is profitable, but for the most part it comes with age.

In practice monopolist examining boards in any profession can only exact a very modest competence. And, perhaps, the chief duty of the teaching schools is not to turn out a finished article, but a man that is ready, willing, and fit to learn during all the years of his life.

Most of you, gentlemen, have to live in lodgings, and they are generally dull and depressing. If you want a little brightness of an evening go to a theatre, not to a music hall. I may be old-fashioned, but it seems to me that there is far too much of the music hall nowadays. In the theatre—if you cultivate a taste for what is best—you will learn a good deal: point, effect, brevity, the pronunciation of the Queen's English. No scholar and gentleman need be ashamed of a taste for the play. If you have a turn for music, spend a shilling pretty often in going to the orchestral concerts. The band is at first a little bewildering, but soon you begin to despise the trashy ballad concert. On Saturday afternoon go for a long walk in the country. I would not willingly give up the custom. Remember that you are in a city full of libraries, and that you can refresh yourselves upon a good book for twopence a week. If you read nothing but novels, read good ones. Hardy, Blackmore, Stevenson, Conan Doyle, Walter Besant at his best, will lift you out of the weariness of dull routine, and leave you the better for a few hours of other worlds and another language. Do your duty day by day, gentle-

men, in the station to which you are called, and you will generally find that other people will fairly well do their duty to you.

THE NEW VETERINARY COLLEGE, EDINBURGH.

The New Veterinary College was opened for the session on October 3rd, when Mr. R. S. M'Dougall, M.A., B.Sc., Professor of Biology, delivered the inaugural address. There was a crowded attendance of students and others interested in veterinary science, in the large lecture hall, and the chair was occupied by Principal Williams, who was accompanied to the platform by Lord Provost Russell, a number of Town Councillors, farmers, and veterinary surgeons. In opening the proceedings, the chairman reminded the students that they must now possess the same educational standard as students of medicine. The preliminary examination was now extremely stiff. Of course, a man could not be too well educated. At the same time, to his old-fashioned ideas, it seemed that the educational test was too high for the veterinary surgeon. Not that a veterinary surgeon should not possess a high education, but his remuneration in practice was not sufficiently great to induce men of the highest education to enter the ranks of the profession. (Applause.)

Professor M'Dougall then proceeded to deliver his address, taking as his subject "The Ancestors of the Horse." In a very interesting strain he traced the ancestry of the horse by means of the unwritten stud-books of geological remains back to the fossil horses found in the deposits of the Eocene period, when the animal's foot had five digits, and he showed how, in process of time and evolution, the lateral digits of the horse's foot had disappeared by slow degrees in the course of geological æons. The lecture, which was listened to with evident interest and relish by the large company, was illustrated by a large number of slides, the reflection of which was thrown on a screen by a magic lantern. The believer in evolution, Professor M'Dougall said, looked upon all existing species as derived from species of pre-existing geological periods, and pointed out how animal forms had been modified, one from another, in the lapse of time, and how types of structure traced back reached quite simple forms. The address illustrated this in the case of the horse, where,

tracing step by step the modifications from a more primitive form, they arrived at the highly modified horse of the present day.

At the close of the address, Professor Williams referred to the question of the Canadian cattle lung disease. Perhaps, he said, he would do better to leave sleeping dogs alone, but it was difficult not to have the last word, although he confessed he had the majority of opinion dead against him. He had made an investigation into the question lately, and he did not find fault with the Board of Agriculture, for he had an opportunity of seeing the lung in dispute, and giving evidence, an opportunity of which he could not, owing to other important engagements, avail himself. Though he had not examined the lung in question he had studied the evidence fully. The evidence of even the strongest witness who supported the practice of the Board amounted absolutely to nothing, as that witness only went the length of saying that while he did not like to say that it was a case of pleuro, he would not like to say that it was not a case of pleuro. For himself, he maintained as firmly as possible his former opinion that Canadian lung disease and pleuro-pneumonia were two different things. The former was a disease of the bronchial tubes, like a cold in the human being; the latter was a contagious disease coming from the blood, due to an organism in the blood. Although the weight of evidence was against him, and the Government was acting upon it in excluding Canadian cattle, he held that he had some reasonable ground at least for the position he maintained. With the view of pointing out the difference in the diseases to which he had referred, the Principal had several microscopic sections of lungs thrown upon the screen—the one series showing the Canadian lung disease, as he holds it to be—and the other the ordinary pleuro-pneumonia.

General Tweedie proposed a vote of thanks to Professor M'Dougall, which was heartily accorded.

Lord Provost Russell, in moving a vote of thanks to the chairman, said he had been greatly struck with the palpable difference shown by the sections of the Canadian lung as compared with the section of the lung showing true pleuro-pneumonia. For himself, he thought as a medical man that there was still much room for doubt, and there was also good ground for moving in the direction of having further investigation into the subject. Principal Williams was one of their most successful teachers of veterinary science, and at another veterinary college that

day he had heard him spoken of as one of the most distinguished veterinarians of the present day. (Applause.) —*North British Agriculturist.*

Contagious Diseases.

Contagious Diseases (of Animals) in Great Britain.

Pleuro-pneumonia.—No case of this disease has been discovered in Great Britain since the outbreak at Hendon in July, when the whole of the cattle which had been exposed to the risk of infection were slaughtered. During the past month one cow, the property of a dealer near London, was slaughtered as suspected of being affected, but she was found on *post-mortem* examination to be free from pleuro-pneumonia.

As there have only been two outbreaks of pleuro-pneumonia in forty-one weeks of this year, pleuro-pneumonia may now be looked upon as a thing of the past until it is re-imported from abroad.

Swine Fever.—Again we have to complain that the returns relating to this disease, as now published in the *London Gazette,* afford very little information as regards the progress of the disease. Formerly, when the local authorities had to deal with swine fever the number of fresh outbreaks in each county was given in the return, as well as the number of animals attacked during the week. Also how the diseased pigs were dealt with, whether they died, recovered, were killed, or left alive. From the figures then published we could see in what counties fresh outbreaks occurred week by week, and also make out whether the local authorities in those counties slaughtered the diseased swine in their district. Since the Board of Agriculture, about a year ago, took over the slaughter and compensation duties in relation to this disease, the only figures given in the weekly return have been under three headings : 1st, Number of swine that died from swine fever during the week; 2nd, Number of swine slaughtered as diseased or as having been exposed to infection; 3rd, Number of swine slaugtered as suspected, but found free from swine fever.

Under this system of publishing the returns it is not only impossible to form any idea as to the number of fresh

outbreaks and pigs attacked, but the number of counties in which the disease exists cannot be made out.

Comparing the figures relating to swine fever for different periods, we do not find that the Board of Agriculture has made any progress towards getting rid of the disease after close on twelve months' work.

The returns show that during the first six months of the present year on an average about 155 pigs died of swine fever weekly; 1391 were killed as diseased or in contact, and 22 per week were killed as suspected, but found free from the disease.

When we turn to the figures published relating to swine fever since the end of June, we find that the deaths have averaged about 143 per week; the pigs slaughtered as diseased or in contact 885 weekly, and the suspected 33 per week. This is not very encouraging; the decrease in the deaths is very small; the decrease in the number of diseased and contact pigs we hear is partly due to the fact that the Board of Agriculture, instead of slaughtering so freely as they did at first, are now, in some cases, trying isolation of pigs on infected premises.

In looking over the history of swine-fever in this country, we find it stated by Professor Brown that this disease increases and decreases at certain times of the year, and that it is usually less prevalent during the last and first quarters of the year. From this it may be gathered that the natural period of decrease has already begun, and, taking this into consideration, we are inclined to think that no progress has been made towards getting rid of swine fever.

Anthrax.—The increased prevalence of this disease last year has been maintained during the first forty-one weeks of the present year, there having been 402 fresh outbreaks as compared with 405 in the corresponding period of last year. The number of animals attacked has been 857 as compared with 950 in 1893. The last published return—that for the week ended October 13th—shows five fresh outbreaks and six animals attacked, five of which died and one remained alive when the return was made up.

Glanders (including Farcy).—From the returns this disease appears to be less prevalent than during the past three years. The fresh outbreaks this year in forty-one weeks have been 793, as compared with 1118 in 1893, 1316 in 1892, and 1046 in 1891. The number of horses attacked this year has been 1151, as compared with 1770, 2374, and 1898 in the three preceding years. The last published

return shows 28 fresh outbreaks of glanders reported in the week, and 29 horses attacked. Of these 22 of the outbreaks and 23 of the horses attacked were in London.

Rabies.—The returns relating to this disease are still unsatisfactory. There have been 152 cases this year—or nearly four per week—as compared with 55, 21, and 72 in the corresponding periods of the three preceding years.

Contagious Diseases in Ireland.

Swine Fever.—In the forty-one weeks ended October 13th 5885 fresh outbreaks were reported, 2467 diseased swine died, 24,219 were slaughtered, and 7351 contact or suspected swine were killed. During the first two weeks of October 298 fresh outbreaks occurred; 93 diseased swine died, 853 were slaughtered, and 578 contact or suspected swine were killed.

Rabies.—In the forty-one weeks, January 1st to October 13th, 587 animals have died or been killed affected with rabies.

Anthrax.—In the same period 5 fresh outbreaks of anthrax were reported, and 6 animals were attacked.

Glanders.—Fresh outbreaks 11; number of animals attacked 29.

Opinions and Research.

PRUSSIA.

Zeitschrift für Veterinärkunde.

312. Galvanism.

V. S. Gutzeit has used the galvanic battery in four cases of "colic" associated with nearly complete cessation of peristalsis. The result was satisfactory. The back was moistened with salt water and the belly also, and the poles applied.

V. S. Korff cured a case of lumbago by application of galvanism. It was used twice a day.

313. Tubercle in a Horse.

V. S. Dix.—At first attention was drawn to the animal by its want of stamina at work, and it was said to perspire easily. Later its condition became worse. Auscultation and percussion revealed nothing abnormal. The course of the disease was that of chronic cachexia, and when the animal succumbed it was a mere skeleton.

Autopsy.—The glands of the intestines were tuberculous, and microscopical examination demonstrated a large number of the bacilli. The lungs were riddled with tubercles the size of a pea.

314. Sarcoma in the Ethmoid of a Horse.

V. S. Pieczynski.—*Symptoms.*—The animal stands with its head lowered, and is apathetic except when approached, and then it is nervous. It does not object to be touched, except about the forehead, and then it is restive. When led out it blunders against objects, bores forwards, or wanders in a circle to the left. Treatment produced no result, and it was destroyed.

Autopsy.—A flesh-coloured neoplasm about as large as a pigeon's egg was found firmly attached to the right olfactory bulb. Microscopical examination demonstrated sarcoma.

315. Vaccinia.

Dr. Buttersack, 1st Class Assistant Surgeon Imperial Health Office in Wurtemburg, reports that in examining lymph he constantly found a number of small bodies of equal size, sometimes singly, at others in chains. At first he thought they were smallpox cocci (Pockenkokken), but on further study he found that a network of fine pale filaments appeared. He also found the filaments in the growing and mature pustule, but after that the little bodies became more and more numerous, and the filaments gradually disappeared. As after innumerable experiments the author invariably found the bodies which he calls spores, he considered that they are characteristic of vaccinia, inasmuch as he failed to find them in acne, erysipelas, or exudates. He failed to cultivate them on the usual artificial media. He inoculated himself with lymph containing spores, and in six hours he found a few filaments in the wound juice, in twelve hours they were more numerous, and in twenty-four hours the above-mentioned networks appeared, whereas on the third day he found the spores again. In two other experiments he had similar results.

316. Dynamic Effect of the 8 mm. Austrian Bullet.

Dr. Johann Habart, Vienna.—The bullet breaks bones at 2300 metres, and wounds soft parts at 4000 metres. Whereas the old bullet bruised the tissues and tore blood-vessels, the new one tends to make a clean cut. This circumstance, as it influences the formation of thrombi, leads to more profuse bleeding, yet as the wound is very small the hæmorrhage is internal, either in the cavities or

the cellular tissue, and so hæmatoma and traumatic aneurisms will be more frequent. As the result of the lesser shock of the new bullet, which will not cause so much local or general stupor, the spontaneous stoppage of bleeding may be rare; on the other hand, as the hole is smaller it will be easier for the blood to form a plug. Further, as the new projectile acting upon bones causes fewer fragments to be driven diametrically or centrifugally, it follows the vascular damage will be in a more circumscribed area. As the tendency of the new bullet is to separate the intima from the muscularis and adventitia of blood-vessels, it places them in a favorable position to form thrombi.

317. Rapid Staining of Tubercle Bacillus.

Wastinkow and Pewsner recommend a preparation of aniline dye in corrosive sublimate solution, as it saves the necessity of warming the mixture. Thus:—10 cm. of a 1 : 2000 sol. of sublimate to which aniline oil has been added and filtered add 1 c.cm. of a 10 per cent. solution of gentian violet in absolute alcohol. In this place the cover-glass for five minutes, wash with distilled water, then with Acid. Hydrochloric. till all the colour has gone.

Berliner Thierärztliche Wochenschrift.

318. Fibro-sarcoma.

Tempel, Grimm, reports a case of paralysis of the left facialis and trigeminus nerves due to the above in an old horse.

Autopsy.—The neoplasm implicated the left maxillary joint, infiltrated the surrounding periosteum, pushed the salivary gland out of its place, filled the guttural pouch completely, and the left eye socket partially.

319. Trichinosis in a Dog.

Diugay, Filehne.—The patient had been fed two weeks previously upon pork containing many trichinæ. The symptoms were those of the nervous form of distemper.

Autopsy showed everything normal except that a large number of wandering trichinæ were found in the muscles.

Zeitschrift für Fleisch- und Milch Hygiene.

320. Enzootic Actinomycosis.

Neuwirth, Kipfenberg, reports an outbreak of the above. The animals comprised one bull, fifteen cows, sixteen calves, and fourteen oxen. Of these the bull, the calves, and two oxen were not attacked. Most of the patients had small ulcers on the tongue, in which were

found the beards of summer wheat upon which they had been fed. The owner reported that there had been an outbreak of foot-and-mouth disease six weeks previously, and the reporter states that in his experience foot-and-mouth disease is a predisposing cause of actinomycosis. The author connected the disease with the beards of the wheat. This forage was discontinued, and under iodine treatment all the animals recovered.

321. Trichinosis.

In Punitz, Poland, a carcass was condemned for the above. It was stolen, and three persons ate some of it, whereupon they became infected and one died.

322. Australian Meat.

The importation of the above is greatly increasing in Hamburg, where it is sold 40 per cent. under the local prices.

FRANCE.

Recueil de Médecine Vétérinaire.

323. A Case of Locomotor Ataxy treated with Testicular Extract.

M. F. Mourot.—"Dakelani," a vigorous fifteen-year-old stallion, was at the beginning of the covering season of 1893 in perfect condition and health. On the 20th April he went lame on the near hind, but the lameness could not be localised. At the end of a week the loins became arched and stiff, a very marked difficulty in moving the hind quarters appeared; the animal, who rarely lay down formerly, is now constantly in decubitus, and appears to find relief thus. In the meantime the appetite was irregular, digestion became only partial, progressive emaciation was noticed. A slight accleration of pulse and respiration was noticed also. The case proceeded in this manner for a month; the animal became a mere wreck covered with bedsores; it was unable to walk at all. In consultation it was suggested that the locomotor ataxy was determined by the very frequent services of the stallion, and subcutaneous injections of extract of sheep's testicles was decided upon. The testicles were obtained fresh, cleared of their envelopes, cut small, and powdered in a mortar with distilled water. Of this 6 to 8 c. cm. were injected three or four times a day.

In three or four days improvement was noticed, the paralysis of the hind quarters was not quite so marked, but

the preparation of the extract without antiseptic precautions gave rise to small abscesses, which, however, rapidly healed. The continued treatment resulted in a return to health of the patient; in ten days the stallion could walk a few yards without staggering; the food was better digested, and the animal visibly improved in condition. In three weeks the stallion might be considered as cured. On the 2nd July he was castrated, and sold on the 7th. Since then he has worked as a post horse between Affreville and Milianah, and acquits himself well.

324. Rheumatoid Affection in Cattle.

M. J. N. Ries, Ettelbruck.—Five young animals, aged between eleven and fifteen months, were sent out to graze for the first time on the 11th May. They were in good condition, but the weather was stormy, and from time to time there were heavy and very cold showers. On 17th May the weather was no better, and the calves when turned out lay down at once in the field, and on the following morning the owner was unable to make them get up, all power having apparently left the limbs. Ries saw them on the 19th. The appetite was good; there was no loss of sensation in the legs. The urine was high coloured, slightly red.

Diagnosis.—"This malady is designated by us congestion of the marrow, and is considered by German authors as a rheumatismal hæmoglobinuria."

Treatment.—The animals were bled to two or three litres, and three received alkaline purgatives; the others, strong doses of salicylate of soda. They were to be kept warm. For five days the animals were decumbent, but fed and ruminated regularly. At the end of this time those that had received salicylate of soda were cured. The others took longer.

325. The Attitude of Patients with Foreign Bodies in the Heart.

M. P. Moullis, of Hyères.—If one is called in when the foreign body is travelling between the rumen and the heart, it is extremely difficult to establish a serious diagnosis, but as soon as the heart is reached, even slightly, the animal assumes a remarkable position when standing. The neck and the muzzle are stretched forward, the elbows turned out, the anterior limbs are not drawn backwards very much, but the posterior ones are brought under the belly. At first sight one would suspect peritonitis. There

is an expression of extreme anxiety; the respiration is dyspnœic, without cough. There are strong and tumultuous heart-beats, with characteristic resonance. In support of the above remarks the author gives five cases in which he successfully diagnosed the presence of foreign bodies in the heart, these cases being confirmed by *post-mortem* examination.

326. Medico-legal Observations about Bovines.

Professor Bouley.—The following cases relate to death caused by criminal means.

Case 1.—Mr. T—'s cow calved normally, but a low-class butcher, well-known as a dealer in doubtful meat, came to the place in the absence of the owner, and asserted to T—'s wife that he had been sent to treat the cow. The woman objected on the ground that the case was at an end. After some talk Mrs. T— was persuaded by the butcher to supply some oil, and to leave the man with the cow. Forty-eight hours afterwards the cow died. Necropsy showed a rent in the uterus near the neck, and a part of the small intestines was tied as butchers tie the intestines to prevent the contents being discharged. The animal died of entero-metro-peritonitis. The butcher confessed that he had introduced his hand into the matrix, and had made a rent large enough for him to seize and to withdraw the intestine. He knotted the gut, and returned it into the abdomen. The butcher was awarded six months' imprisonment.

Case 2.—A man killed a heifer at Bengnies, and Bouley received directions from the Public Prosecutor to report to the Court. Bouley found that the heifer had been cut up and sold as meat, but after inquiries he proceeded to a tanyard and was shown the hide, which was already in the lime-vat. A careful examination, however, showed an U-shaped ecchymosis in the frontal region which corresponded with the back of the head of an axe in the possesion of the accused. Result: six months imprisonment.

327. Extirpation of the Spleen.

M. A. N. Vitzon has demonstrated that extirpation of the spleen of dogs and guinea-pigs exercises no effect upon their procreative functions.

328. Infectious Disease and Army Horses.

First Class V.S. Prévost, writing to the editor, points out that inasmuch as a notification to the civil authorities is made of the outbreak of infectious disease in army

horses, it would be advantageous if the civil authorities were ordered to report all outbreaks of infectious disease amongst civilian horses to the war ministerium. He says that army horses on the line of march, and attending manœuvres, &c., are frequently in danger of infection, and suggests additional care might be taken if the presence of infectious disease were to be notified to army veterinarians.

Revue Vétérinaire (Toulouse).

329. Fracture of the Spine in a Horse.

M. G. Joly. — In 1889 Moussu, writing upon this subject, stated: "Forcible extension is the only determining cause of the fracture. The muscular force acting when the horse rears . . . . became superior to the power of resistance of the bones and provoked fracture. There is nothing wonderful in this when the power of the muscles attached to the vertebral column is considered. The fracture generally occurs in the key of the arch of dorso-lumbar inflexion. Hence the fracture is produced by a simultaneous extension of the vertebral column, and not by a flexion." In support of this statement Joly gives a case. A young mare was turned into a large paddock with others, and, as generally happens the first time, she bounded, kicked, and galloped about. While she was being observed she was seen to give a tremendous kick and to collapse instantly and fall on the ground, whence she made no effort to move. Joly and the onlookers approached her and found that she could not get up, and so she was dragged on boards into a loose box. Next day the mare passed fæces; the tail moved normally, but the hind legs do not move.

From 22nd to 24th March the paralysis becomes more complete, the appetite remains, and there is great thirst. On 26th the symptoms were aggravated, and the mare was destroyed.

Autopsy.—The psoas magnus of the left side is infiltrated with blood. The right psoas is intact. The spine is fractured level with the intervertebral fibro-cartilage of the first and second lumbar vertebræ. The ilio-spinal muscles are ecchymosed. The first and second lumbar vertebræ are completely separated one from the other, but the spinal marrow is neither ruptured nor bruised. The left transverse process of the first lumbar and spinus apophysi were completely fractured. The transverse processes of the third lumbar were fractured.

330. Foreign Body in the Trachea.

Bournay.—A dog, one year old, very thin, with difficult respiration, accompanied with roaring, whistling cough frequently repeated, and with occasional vomitings, was brought to the author. Appetite and thirst normal, but the animal could not swallow. Laryngeal exploration gives no indication of the cause.

Autopsy shows a small pebble just below the vocal cords, encysted in the thickness of the mucous membrane of the trachea, which is thickened and congested. The pebble was covered with fibrinous exudate.

331. Glanders in Man.

A farmer, M. Neuville, was prosecuted at Rouen for contravening the law relating to glanders for not reporting two cases. One of his grooms caught the disease and died, whereupon Neuville was prosecuted for "homicide by imprudence," and punished on both counts.

A case is reported from Russia:—A Tartar, who had rheumatism in his hip and elsewhere, rubbed himself with the brain of a glandered horse, and contracted glanders.

332. Baths for Horses.

In the town of Baden 60,000 francs have been expended to build sulphur baths for rheumatic horses.

Journal de Méd. Vétérinaire et de Zootechnie.

333. Pneumobacilline as a Preventive of Contagious Pleuropneumonia in Bovines.

M. Arloing reports and compares a nnmber of experiments carried out by Messrs. Rabcis and Duprez—(*a*) by Willems' method, (*b*) by Arloing's method. Arloing concludes that, although the two procedures appear to be of equal efficacy at present, his process is void of the formidable and sometimes fatal complications which arise in Willems' process.

334. Fresh Researches upon the Influence of Bacterial Associations.

Professor V. Galtier reports the following conclusions drawn from further experiments upon this subject:

1. Microbes attenuated to a point that they cannot of themselves produce a fatal disease, may become exalted, revivified, and renew their original virulence if two species are inoculated into one organism.

2. The two microbes may proliferate side by side, but

as a rule one of them disappears, or tends to disappear, while its companion becomes pathogenic.

3. When two species of microbes become associated, sometimes one, sometimes the other, reacquires virulence, according to the method by which they have been introduced into the system, and according to the species of the animal experimented with.

4. Bacterial associations may be used in the laboratory to renew the virulence of attenuated microbes.

5. Not only does this explain the recrudescence of certain epizootics, but it shows the aggravated effects of vaccinations made with benign virus.

6. One may foresee that the passage of a microbe through an organism, while conferring immunity for a given disease, increases the patient's receptivity for another malady.

BELGIUM.

Annales de Médecine Vétérinaire.

335. Plumbism (*continued from* 307).

Mosselman and Hébrant.—Chemical research. One may be called upon to search for lead in divers liquids, tissues, and suspected products. If the material contain much metal, one may have recourse to operations which put it easily in evidence. Thus, if lead is present in soluble form, it will suffice to treat it with water, and to demonstrate its presence in the filtered liquor. If it be in an insoluble form, carbonate of soda (dry) should be added, and the whole placed on a piece of charcoal and heated with a blowpipe. The result, a bead of grey-blue colour, gives an oreol of yellow-rose colour (oxide of lead) if heated in an oxidising flame. If there are only traces of lead in large masses of organic matter, the best way to obtain good results is to destroy the organic material, and as lead is only very slightly volatile at a reddish-white heat, the process of destruction may be carried out pretty rapidly.

Ellenberger and Hofmeister operate in a special way. They carbonise with mild heat the suspected material, which has been dried previously. They oxidise the coal thus formed with nitric acid, and retake what remains in water acidulated with the same acid. The residue is calcined at dark red heat, and the cinders are reheated after nitric acid has been added. The cinders are then treated with weak aqua regia, which gives an acid solution, which is added to the first. The liquid thus prepared contains

the metal in solution. Whatever procedure is employed, the liquor containing the metal in solution is neutralised to slight acidity and precipitated with gaseous sulphuretted hydrogen. The precipitate, washed with boiling water, is dissolved in aqueous nitric acid. The filtered solution presents the following characteristics :—

1. With dilute solution of potassium chromate a yellow precipitate is obtained, insoluble in dilute nitric acid, but soluble in alkalies.

2. Iodide of potassium gives a yellow precipitate of iodide of lead.

3. Sulph. acid gives a white precipitate which blackens with sulphuretted hydrogen.

4. A piece of zinc plunged into the solution precipitates lead in a crystallised form.

Medico-legal Considerations.—When lead has been found by a chemical process in the cadaver, it remains to be ascertained if it has been the cause of death. This will depend upon the symptoms shown.

UNITED STATES.

American Veterinary Review.

336. Hairs in the Rumen of a Cow.

On the 3rd of September we were called to see a very sick calf. The animal could not support its own weight, and even in the recumbent position contrived to tremble in all its muscles. The umbilicus was swollen and inflamed, and besides a high fever the patient also suffered from obstinate constipation.

We cleansed and disinfected the navel, making an injection in the same, and administered purgatives in various forms. Clysters yielded an exceedingly small quantity of bad-smelling fæces, coated with more or less mucoid matter. On the third day, as we could distinguish no improvement, and as the subject was in good condition physically—being unusually strong and well-developed for its age—we advised slaughter.

In the rumen a ball of hair, as large as a goose egg, was discovered. Beneath the latter the gastric papillæ were in an advanced stage of inflammation, and much hypertrophied. The lymph-glands along the alimentary canal were likewise inflamed; in those to be found in the mesentery blood-clots were seated. The interior of the intestinal tract was discoloured here and there by hæmorrhagic diffusions. All the remaining organs were healthy, and the

muscular substance in good condition ; the flesh was put on sale for consumption.

337. Santonin in the Dog.

When santonin is given to man in doses of 5 to 8 gr. its toxic symptoms are induced. In Canidæ this agent is generally prescribed for the destruction of round-worms, and here it is administered in portions of 3 to 5 gr.

Keppel gave a dog, weighing 20 lbs., 6 gr. in unison with 1½ oz. of oil, and increased the dose to 15 gr. within four days. The urine became deeply red in colour as the dose was enlarged. Poisonous effects were, however, not present ; the subject continued cheerful and retained the appetite.

A dog, weighing 13 lbs., received 7½ gr. without disadvantage; in this same case 15½ gr. were given with the effect that in three quarters of an hour epileptiform convulsions seized the animal. The same quantity again administered produced the same result, and after a few hours the patient recovered. A three-weeks-old puppy, weighing 4½ lbs., resisted the action of 4½ gr. in glucose, and even 9 gr. failed to render the animal unconscious, producing at the most slight contractions of the muscles, staring countenance, and unquiet.

In order to confirm the assertion that santonin was eliminated by the kidneys, a medium-sized dog was given 7½ gr. of santonin in some sugar. In three quarters of an hour the urine showed an onion-red colour, reaching its most chromatic effect in the purple hue after the lapse of three hours ; in twenty-one hours the urine assumed again its normal colour.

The same animal was made to take santonin in Ol. Ricini, without, however, in any way influencing the elimination of urine. Santonin dissolves but imperfectly and slowly in oleaginous fluids. Therefore, when given in these, it should be thoroughly shaken previous to administering.

338. Normandy Breed of Cattle.

It is stated in an editorial that *Cotentine* cows are claimed to be the finest milkers in the world, and often produce thirty-five quarts of milk in twenty-four hours, and have been known to produce fifty quarts. It is also stated that pleuro-pneumonia and tuberculosis are unknown in this breed, and therefore it should be imported to replace animals that have been destroyed for contagious disease.

339. Tuberculin.

Dr. J. Faust, V.S., Pough Keepsie, N.Y., reviews his work with the above. He gives careful data and details of a great many cases, the autopsies being generally witnessed by other practitioners. He mentions also a case in a heifer which, on physical examination, showed marked symptoms of tuberculosis, so diagnosed by three veterinarians. This heifer was tested twice with tuberculin, but showed no reaction, and on *post-mortem* no lesions of tuberculosis were found. He adds, "This test was a great victory for tuberculin. Every cow that reacted showed marked lesions of tuberculosis.

The Veterinary Magazine.

340. Death due to Tubercle Infection.

The four-year-old grandson of Colonel Henry B. Beecher, of N. Broadway, died of tubercular meningitis. His physician says that the disease undoubtedly originated in two fine Alderney cows which Colonel Beecher bought last May. The child was perfectly healthy prior to the attack, and his parents on both sides have no tubercular tendency. The cows being suspected were tested with tuberculin, and reacted in the usual way.

Army Veterinary Department.

Veterinary Captains D. C. Pallin and F. Raymond embarked in the Steamship "Dilwara" on 26th September for India.

Veterinary Major J. Hammond embarked for Egypt on 10th October to take up the duties of Senior Veterinary Officer in that country.

Extract from 'London Gazette.'

The undermentioned Veterinary Captains to be Veterinary Majors. Dated 26th September, 1894.

Walter Boulton Spooner.

Samuel Duff-Gillespie.

SOUTH DURHAM AND NORTH YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

(*Abstract.*)

The sixth annual meeting was held at Darlington on September 7th, 1894, A. Peele, Esq., President, in the chair. There were also present Messrs. F. R. Stevens, C. G. Hill, W. N. Dobbing, C. T. Holmes, A. Neish, P. Snaith, H. H. Roberts, G. E. Gibson, J. E. Peele, W. A. Hancock, and W. Awde.

The following gentlemen were also present as visitors : Professor MacFadyean, London; Messrs. J. W. T. Moore, Newcastle; G. R. Dudgeon, Sunderland; H. Peele, Durham; W. H. Blackburn, Barnard Castle; Pratt, Leeds ; D. Barningham, Darlington. Several apologies were received for non-attendance.

Presidential Address by Mr. A. Peele, F.R.C.V.S.

Gentlemen,—It was with very mixed feelings that I received our worthy Secretary's letter after the meeting at Bishop Auckland, which I regret to say I found impossible to attend, telling me that I had been elected to this honourable position. I must confess I felt disposed to decline the honour on account of want of confidence in my ability to carry out the duties which hitherto have been so admirably carried out by my predecessors, but when I thought of the friends I had made in connection with this Association I decided to accept the post to which they had thought fit to elect me, and trust to their kind forbearance for my shortcomings, and to their assistance in carrying on the affairs of the Association, the welfare of which we all have so much at heart.

I have been rather at a loss for subjects on which I might touch in this short address, and I came to the conclusion that there was nothing new which I could put before you, so must ask you to forgive my want of originality, and to listen to what is old though still of interest to us.

With regard to the registration of shoeing-smiths, I believe we all looked with favour on a scheme the object of which was to improve the capabilities of the members of this important trade. But we did not bargain on their using the title "farrier," which was likely to mislead the public, for we north-country practitioners know very well that we, in the country, are more often called farriers than veterinary surgeons, and we also know how keen most shoeing-smiths are to do a little doctoring. We are heavily handicapped—with medicine boxes and chemists to wit—and can ill afford to allow the door to be opened to more quackery if we can prevent it.

Legislation which is so much needed on "tuberculosis" seems to be still far off. This is a serious matter, not only for individuals from a pecuniary point of view, but also for the public health. The butcher has to bear loss for the benefit of the public when he has the carcase of what was apparently a healthy beast when alive condemned owing to its being affected with tuberculosis, the Local Authority having no power to compensate him. Again, the Local Authority cannot prevent the sale of milk from tuberculous cows, although there is little donbt that this is a much more likely source of danger to the public than the consumption of tuberculous meat.

As to the inspection of meat, in towns where private slaughtering

is permitted it is impossible to carry out an inspection worth mentioning. Only where there is a public slaughterhouse has the sanitary authority any chance of preventing the sale of diseased meat; hence towns which possess a public slaughterhouse gain notoriety for the seizure of tuberculous and otherwise diseased carcases; but as I have said before, legislation is required to allow of compensation to those who suffer loss for the benefit of the general community.

There has been some adverse criticism as to our position in carrying out the new swine fever regulations, but I think those who have done work for the Board of Agriculture will agree with me that we are not so badly treated as some would lead us to believe. The regulations now in force ought to clear the country of the disease, but I am inclined to think that the old regulations were more simple, and no doubt would have been sufficient had they been carried out thoroughly by all.

There is a disorder to which pigs are very subject and often reported as swine fever. The symptoms are as follows:—A skin eruption consisting of numerous purple elevated patches, of various sizes and shapes, on the back and sides, loss of appetite, animal disinclined to move, little or no action of the bowels, temperature elevated sometimes as high as 107° F., accelerated breathing, and sometimes a cough. As a rule these cases recover with treatment, the great point being to get the bowels moved; but should a *post-mortem* examination be made we find inflammation of the stomach and bowels, the openings of the follicles around the ileo-cæcal valve very patent, and sebaceous material of a yellow tinge sticking about with fæcal matter. I believe the disorder is due to dietetic causes, for sometimes we find several pigs, subjected to the same conditions, affected.

The matriculation examination now in force should prevent the entrance into our colleges of illiterate men, and if they get through the four years' curriculum with the examinations of the Royal College of Veterinary Surgeons they should be scientific and practical veterinary surgeons. (Applause.)

Professor McFadyean then read a paper on "glanders." He said that the disease had only one cause—the glanders bacillus, its spread being due to the inhalation by healthy animals of the germs derived from those diseased. His opinion was that the disease was nearly always contracted through the respiratory organs.

Having minutely described the tubercules found in the lungs in cases of the disease, the Professor remarked that they were hardly ever found in the bronchial glands. He then described the symptoms of glanders and also of farcy. He also stated that in many cases of the former disease there were no nasal lesions. He advocated the slaughter of all visibly diseased animals when called in to deal with an outbreak of the disease, and the inoculation of the remainder with mallein, in order to find out if the disease was still latent in any of them.

Several of the gentlemen present related their experience of the disease, and asked various questions respecting the manufacture and use of mallein in the detection of the disease. One stated that if there was any doubt about a case he believed a dose of physic would settle the point. Another asked if the Professor had ever noticed in glanders in mares a case where the vaginal mucous membrane seemed to be affected with an intense discharge similar to that which came from the nostril, as he had seen such an one.

Professor McFadyean, in replying to the questions asked, stated very minutely how mallein was prepared, and gave instructions for its use. If an animal is the subject of the disease and his temperature not over 101° F. before the injection, it will most likely rise to 104° F. or 105° F. within fourteen or sixteen hours, and a considerable swelling will form at the seat of the injection. He believed the indications afforded by the characters of the local swelling and the temperature after injection with mallein were nearly infallible. He should kill all that reacted, and repeat the test on the others a week afterwards, in order to make sure that there were no more cases. He also stated that mallein was safe to use, and that he would be glad to supply it gratis to any veterinary surgeon in private practice.

The *President* then proposed, and the *Secretary* seconded, and *Mr. Dudgeon* supported the resolution that a hearty vote of thanks be accorded to Professor McFadyean for his kindness in having come so great a distance in order to read such an instructive and valuable paper.

This was carried unanimously, and the Professor suitably replied.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

(Abstract.)

The Annual General Meeting of this Society was held on the 4th ult. at the Royal College of Veterinary Surgeons. Mr. A. Prudames, the President, occupied the Chair, and the other Fellows present were C. E. Edmonds, Esq., Vet. Capt. E. R. C. Butler, A.V.D., Professor F. Hobday, Messrs. Henry Edgar, F. W. Kendall, G. C. Lowe, F. C. Mahon (Hon. Sec.), Professor T. Macqueen, Joseph H. Manton, J. E. Rickards, James Rowe (Hon. Treas.), H. G. Rogers, Sydney H. Slocock, S. Villar, F. Orford L. Walpole.

The following gentlemen were elected Fellows of the Society:—Mr. Charles Squair, M.R.C.V.S., Reigate; Mr. Tooth, M.R.C.V.S., Enfield; and Mr. James Buxton, M.R.C.V.S., 14, Archway Road, Highgate, N.

The *Chairman*.—Our next business is to appoint officers for the ensuing year, and first a president. I shall be glad to receive nominations for the office of president.

Professor Macqueen.—Mr. President and gentlemen, I have very great pleasure in proposing that Mr. Sidney Villar be our president during the ensuing year. I have not asked that gentleman's consent to my proposition, but he is here, and I dare say he will act if elected. I am sure it will give great satisfaction if he will assent to officiate as president of this Society in the coming year.

Mr. Rogers.—I have much pleasure in seconding the proposition in the event of Mr. Villar consenting to stand.

The *Chairman*.—Before putting the motion I should like to ask whether any gentleman has anyone else to propose. I interpret your silence as a negative reply. I have much pleasure in putting this proposition, and in doing so allow me to say that I do not think a better man—there might be some as good—could be chosen to fulfil the duties of president than Mr. Villar. He has worked for

this Society well in other positions during past years, and I think it is only fair to acknowledge his good service by offering him the honorable position of president.

The *Chairman* to Mr. Villar.—The motion is carried unanimously. We shall be very pleased if you will accept the office of president for the ensuing year.

Mr. Villar.—As it appears to be the unanimous wish of the gentlemen present I shall be very glad indeed to accept the office of president, and I have to thank you all very sincerely for the honour you have done me. In selecting me to succeed a gentleman who has displayed such energy and at all times such tact as the retiring president, I feel very certain that many shortcomings in my line of action will be apparent to all of you; but having for several years held the post of secretary to this Society, I know how at all times the members and Fellows of the Society have loyally supported the Chair, and I must beg of you to afford me that loyal support and ready help, so that I may carry out the duties of president during the ensuing year in a manner worthy of such an old-established and learned body as this. (Applause.)

Election of Vice-presidents.—The following gentlemen were nominated by the under-mentioned proposers and seconders:—Professor Macqueen, proposed by Mr. Walpole and seconded by Mr. Hobday; Captain Butler, proposed by the Chairman and seconded by Mr. Mahon; Mr. Rogers, proposed by Mr. Slocock and seconded by Mr. Villar; Mr. Wragg, proposed by Mr. Villar and seconded by Mr. Walpole; Mr. Prudames, proposed by Captain Butler and seconded by Mr. Mahon; Professor Penberthy, proposed by Mr. Slocock and seconded by Mr. Villar; Mr. Butters, proposed by Captain Butler and seconded by Mr. Rogers; Mr. H. Edgar, proposed by Mr. Rogers and seconded by Mr. Mahon; Mr. Hurndall, proposed by Mr. Rickards and seconded by Mr. Rogers; Mr. Slocock, proposed by Mr. Villar and seconded by the Chairman.

Mr. Rogers declined to stand for election, remarking that in his opinion the older members should be chosen vice-presidents. Besides, he was not always able to attend the meetings of the Society regularly, a capacity that was necessary in anyone holding the position of a vice-presideut. Hence he asked that his name might be withdrawn.

Professor Macqueen preferred a like request. He said:—I would rather some other gentleman was elected. My view of all these societies is that the older members should succeed to positions of dignity first. They have a right from long service to all positions of honour, and younger men can very well wait until their time comes. Another thing we should not lose sight of in coming to an election of this kind is this: if we pass over old members, some of them might be apt to think they are forgotten, and naturally retire from the Society. Hence if we want to retain the strength of the Society we must not forget the older members. (Applause.)

Captain Butler.—I might remark that in the remote contingency of a gentleman being elected contrary to his desire he would be placed in a very false position.

The *Chairman.*—Is it your wish to withdraw?

Captain Butler.—Yes, with the kind permission of the proposer and seconder.

The names of Professor Macqueen, Captain Butler, and Mr. Rogers were then withdrawn, and the voting for the other nominees was

Mr. Prudames, 12; Mr. Wragg, 10; Mr. Butters, 8; Mr. Slocock, 5; Professor Penberthy, 4; Mr. Edgar, 3; and Mr. Hurndall, 2.

The first-named four gentlemen were accordingly declared elected vice-presidents for the ensuing year, 1894–5.

The Hon. Treasurer.—Mr. Edgar proposed that Mr. Rowe be re-appointed honorary treasurer.

Professor Macqueen.—I have much pleasure in seconding that motion.

Mr. Rowe.—With your permission, Mr. Chairman, I should like to say that I am not so desirous of retaining this position that I will not readily make way for another gentleman taking the treasurership if that be your wish. I am perfectly willing to retire, and for private and personal reasons I would rather waive any claims I may be thought to have to re-election.

The *Chairman.*—I have very much pleasure in telling you, Mr. Rowe, that you have been unanimously asked to act as honorary treasurer of this Society in the ensuing year, and I only hope and trust that you will have health and strength to fulfil the duties of the position as satisfactorily in the future as you have done in the past. (Applause.)

The Hon. Secretary.—Mr. Edgar.—I have very great pleasure in proposing that Mr. F. C. Mahon be re-elected honorary secretary, if he will kindly continue to serve in that capacity. I am sure during the past year he has performed his secretarial duties—which have often, I am afraid, been very irksome and difficult—in a highly satisfactory manner. (Hear, hear.)

Mr. Rowe.—I have much pleasure in seconding the proposition. I cannot allow this opportunity to pass without congratulating and complimenting my worthy colleague upon the admirable and satisfactory way in which he has discharged the duties of the position which he was last year called upon to perform for the first time.

Election of Council.—The following gentlemen were elected:—Professor Hobday, 14; Mr. J. A. W. Dollar, 14; Professor Macqueen, 13; Mr. Rogers, 13; Mr. Hunting, 12; Mr. Edgar, 11; Mr. Hurndall, 10; Mr. Roots, 10; Capt. Butler, 10; Professor McFadyean, 10; Prof. Penberthy, 8; and Mr. Sheather, 7.

The Jubilee Memorial.—The *Chairman* announced that Prof. Macqueen had given notice of his intention to move at the next meeting of the Society a resolution with reference to the proposed memorial to the petitioners for the original Charter of the Royal College of Veterinary Surgeons.

The Retiring President.—Mr. Edgar.—Mr. President, I think that this is the occasion on which we should accord a very hearty vote of thanks to our retiring President. I cannot let this opportunity pass without expressing to you my own, and, I believe, the thanks of all who have attended these meetings during the past year, for the way in which you have presided over them. You have done so with the utmost fairness and the greatest consideration in every respect. Perhaps occasionally it may have been thought that you were a little too lenient, but at the same time you have known when to pull us up and keep us in order. The President is really our man of light and leading, and to him we owe our thanks. I have to propose a very hearty vote of thanks to Mr. Prudames for his conduct in the chair during the past year.

This was seconded, and carried *nem. con.*

Notices to Correspondents.

To ensure the publication of communications in the coming number they should arrive by the 15th of the month.

Letters, Articles, Reports of Cases and of Veterinary Meetings, British and Foreign exchange Journals, Newspapers, &c., should be addressed to THE CONDUCTOR, VETERINARIAN, 35, BARTHOLOMEW ROAD, LONDON, N.W.

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Letters, &c., have been received from Dr. Guillemard, R. Spooner Hart, H. Begg, Greaves, Faulkner and Jones, Jno. A. Dollar, F. W. Evans, "Eastern County," F. C. Mahon, W. Awde, H. Thompson, Professor McCall, B. Freer, P. Moir, E. W. Hoare.

JOURNALS, MAGAZINES, NEWSPAPERS, ETC., RECEIVED.

Agricultural Economist. Agricultural Journal (Cape Colony). *Veterinary Department* (*Board of Agriculture*) *Report*, 1893. *La Clinica Veterinaria. Annales de Médecine Vétérinaire. Recueil de Médecine Vétérinaire. Revue Vétérinaire. Schweizer-Archiv für Thierheilkunde. Berliner Thierärztliche Wochenschrift. Zeitschrift für Veterinärkunde. Oesterreichische Monatsschrift für Thierheilkunde, &c. American Veterinary Review. Veterinary Magazine. Journal of Comparative Medicine. Journal of Comparative Pathology and Therapeutics. Veterinary Journal. Veterinary Record. The Lancet. British Medical Journal. The Field. Live Stock Journal. North British Agriculturist. Bulletin Société Centrale de Médecine Vétérinaire. Hog Cholera and Swine Plague*, Professors Welch and Clement, Baltimore. *Examination of Horses as to Soundness*, Captain Moore (Thacker, Spink, and Co., Calcutta). *Journal Royal Agricultural Society. Report Bombay Veterinary College*, 1893.

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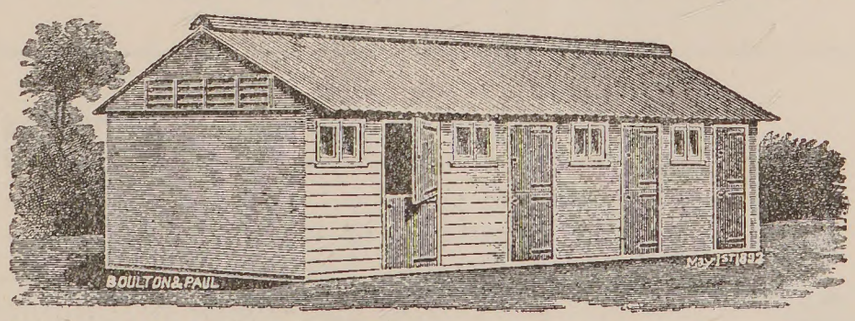

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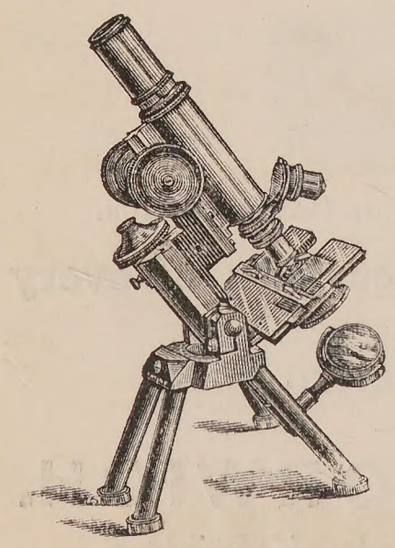

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